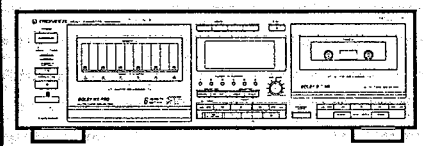
PIONEER®
*The Art of Entertainment*

# Service Manual



ORDER NO.
**ARP2725**

## MULTI — CASSETTE CHANGER

# CT-WM62R

**MODEL CT-WM62R HAS THE FOLLOWING:**

| Type | Power Requirement | Remarks |
|---|---|---|
| KU/CA | AC120V only | |
| SD | AC110V, 120 – 127V, 220V, 240V (Switchable) | |

● **This manual is applicable to CT-WM62R/KU/CA and SD.**

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# 1. SAFETY INFORMATION

**This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.**
**Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.**

WARNING

**Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).**
**When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.**

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

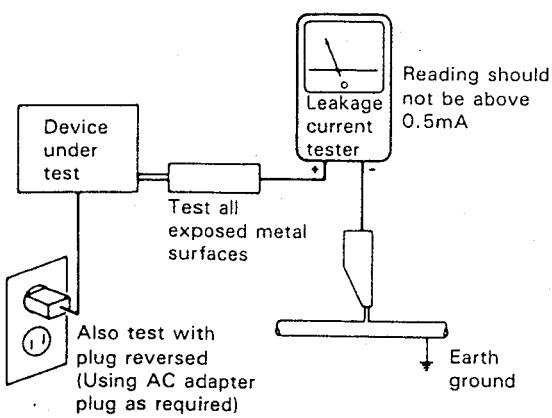
(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

# 2. EXPLODED VIEWS AND PARTS LIST

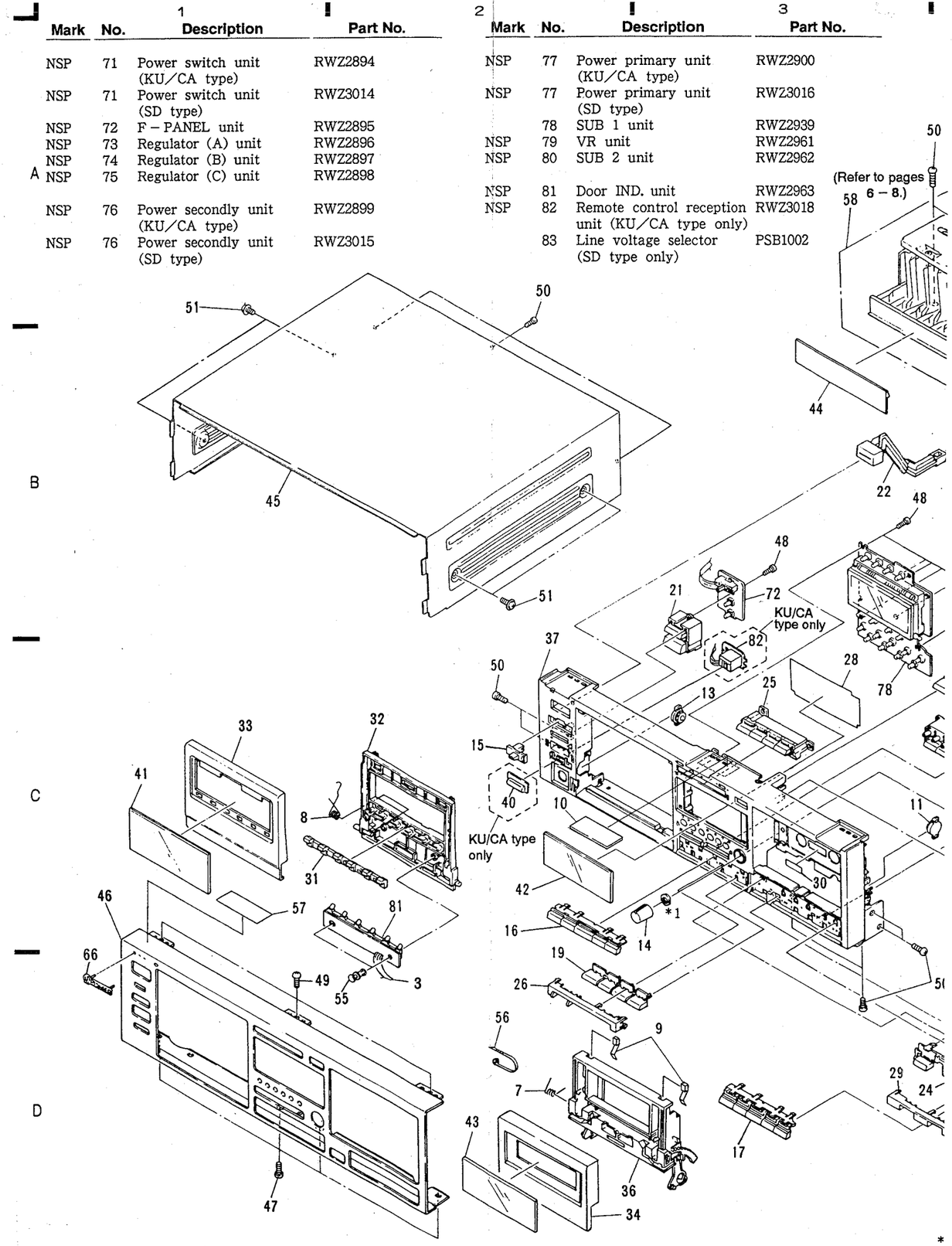
**NOTES:**

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## 2.1 EXTERIOR

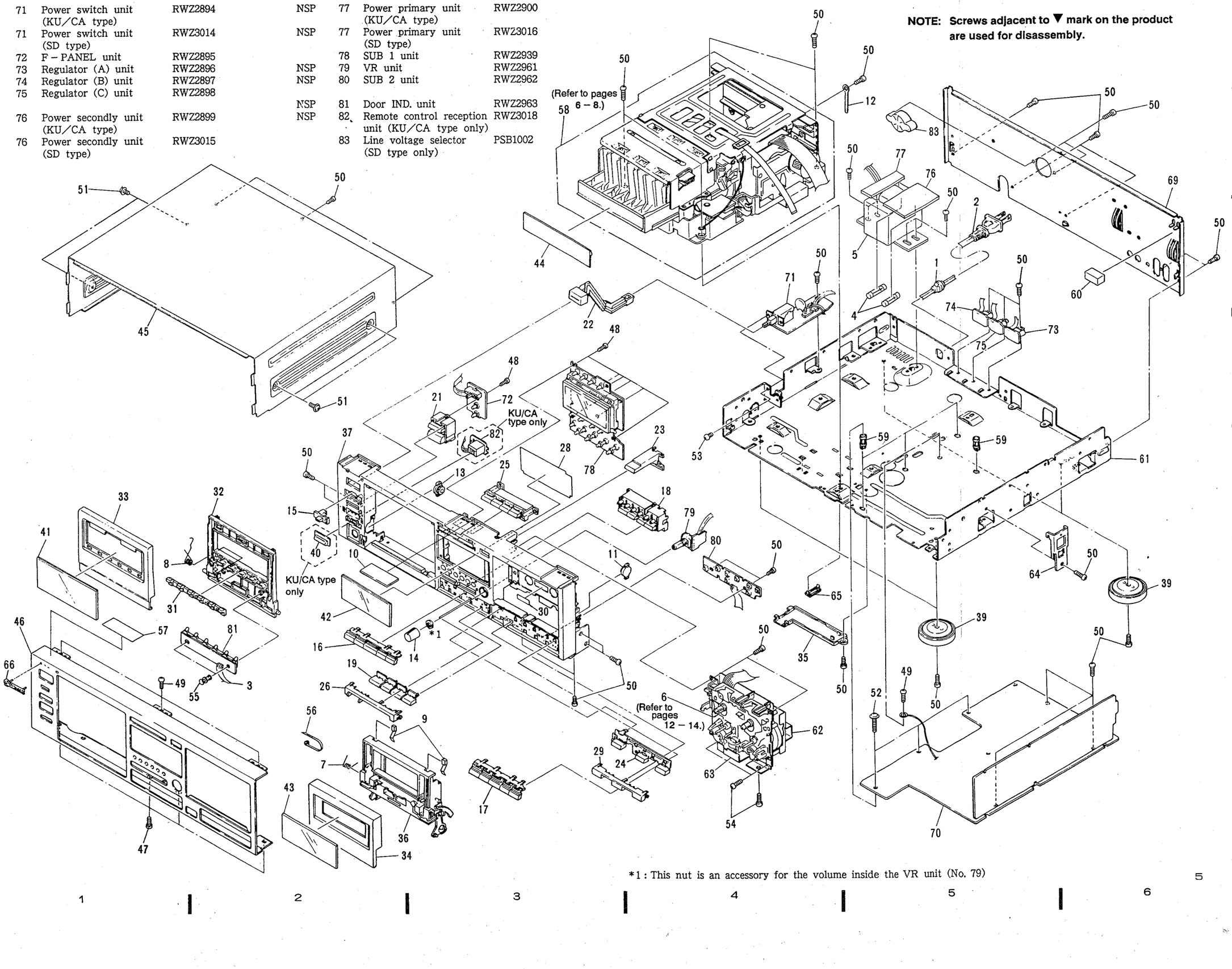
### Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| ⚠ | 1 | Strain relief (KU/CA type) | CM – 22C |
| ⚠ | 1 | Strain relief (SD type) | CM – 22B |
| ⚠ | 2 | AC power cord (KU/CA type) | PDG1015 |
| ⚠ | 2 | AC power cord (SD type) | PDG1013 |
| | 3 | SUMI card 7P | RDD1246 |
| ⚠ | 4 | FU501, FU502 Fuse (UL1.5A) (KU/CA type) | DEK1014 |
| ⚠ | 4 | FU501, FU502 Fuse (1.6A) (SD type) | REK – 102 |
| ⚠ | 5 | Power transformer (KU/CA type) | RTT1231 |
| ⚠ | 5 | Power transformer (SD type) | RTT1232 |
| ⊙ | 6 | Mechanism unit (DECK II) | RYM1197 |
| | 7 | Door spring (L) | RBH1203 |
| | 8 | Door coil spring (1) | RBH1317 |
| | 9 | Half pressure spring | RBK1004 |
| | 10 | Cushion (CR sponge) | REB1168 |
| | 11 | Damper assembly | REC1013 |
| | 12 | Cord clamper | RNH – 184 |
| | 13 | Damper assembly | VXA1153 |
| | 14 | VR knob (B) | RAC1262 |
| | 15 | Slide SW knob | RAC1562 |
| | 16 | Operation button (1) | RAC1819 |
| | 17 | Operation button (2) | RAC1820 |
| | 18 | Tact button (B) | RAC1594 |
| | 19 | REC button (1) | RAC1595 |
| | 20 | ····· | |
| | 21 | Tact button (C) | RAC1598 |
| | 22 | Power button | RAC1600 |
| | 23 | Eject knob | RAC1692 |
| | 24 | Copy button | RAC1694 |
| | 25 | Tact button (A) | RAC1818 |
| | 26 | REC mold (1) | RAH1784 |
| | 27 | ····· | |
| | 28 | FL filter | RAH1788 |
| | 29 | Copy mold | RAH2023 |
| | 30 | Remain display paper | REE – 113 |
| | 31 | LED lens | RNK1700 |
| | 32 | Door (1) | RNK1701 |
| | 33 | Door cover (1) | RNK1900 |
| | 34 | Door cover (2) | RNK1901 |
| | 35 | Lead cover | RNK1835 |
| | 36 | Door pocket | RNT1013 |
| | 37 | Panel stay | RNT1098 |
| | 38 | ····· | |
| | 39 | Insulator | PNW1912 |
| | 40 | Sensor acryl (KU/CA type only) | VNK1566 |
| | 41 | Door lens (1) | RAH1783 |
| | 42 | FL lens | RAH1786 |
| | 43 | Door lens (2) | RAH2024 |
| | 44 | Tray plate | RNK1694 |
| | 45 | Bonnet | RXX1516 |
| | 46 | Front panel (KU/CA type) | RAH2272 |
| | 46 | Front panel (SD type) | RAH2273 |
| | 47 | Screw | BBT30P080FZK |
| | 48 | Screw | BBZ26P080FZK |
| | 49 | Screw | BBZ30P060FZK |
| | 50 | Screw | BBZ30P080FMC |
| | 51 | Screw | FBT40P080FZK |
| | 52 | Screw | IBZ30P150FCU |
| | 53 | Screw | PMA30P060FMC |
| | 54 | Screw | BCZ26P050FMC |
| | 55 | Nylon rivet | RBM – 003 |
| | 56 | Binder | REC – 371 |
| | 57 | Caution seal | RRW1069 |
| NSP | 58 | Loading unit | RXA1540 |
| NSP | 59 | PCB spacer | PNY – 404 |
| NSP | 60 | Spacer | REB1194 |
| NSP | 61 | Main chassis | RNB1073 |
| NSP | 62 | Mechanism shield plate | RNE1306 |
| NSP | 63 | Mechanism bracket | RNE1510 |
| NSP | 64 | PCB holder | RNE1511 |
| NSP | 65 | Lead holder | RNK1563 |
| | 66 | Name plate | VAM1032 |
| | 67 | ····· | |
| | 68 | ····· | |
| NSP | 69 | Rear panel (KU/CA type) | RNA1716 |
| NSP | 69 | Rear panel (SD type) | RNA1717 |
| | 70 | Main unit (KU/CA type) | RWZ2893 |
| | 70 | Main unit (SD type) | RWZ3013 |
| NSP | 71 | Power switch unit (KU/CA type) | RWZ2894 |
| NSP | 71 | Power switch unit (SD type) | RWZ3014 |
| NSP | 72 | F – PANEL unit | RWZ2895 |
| NSP | 73 | Regulator (A) unit | RWZ2896 |
| NSP | 74 | Regulator (B) unit | RWZ2897 |
| NSP | 75 | Regulator (C) unit | RWZ2898 |
| NSP | 76 | Power secondly unit (KU/CA type) | RWZ2899 |
| NSP | 76 | Power secondly unit (SD type) | RWZ3015 |
| NSP | 77 | Power primary unit (KU/CA type) | RWZ2900 |
| NSP | 77 | Power primary unit (SD type) | RWZ3016 |
| | 78 | SUB 1 unit | RWZ2939 |
| NSP | 79 | VR unit | RWZ2961 |
| NSP | 80 | SUB 2 unit | RWZ2962 |
| NSP | 81 | Door IND. unit | RWZ2963 |
| NSP | 82 | Remote control reception unit (KU/CA type only) | RWZ3018 |
| | 83 | Line voltage selector (SD type only) | PSB1002 |



| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 71 | Power switch unit (KU/CA type) | RWZ2894 |
| NSP | 71 | Power switch unit (SD type) | RWZ3014 |
| NSP | 72 | F – PANEL unit | RWZ2895 |
| NSP | 73 | Regulator (A) unit | RWZ2896 |
| NSP | 74 | Regulator (B) unit | RWZ2897 |
| NSP | 75 | Regulator (C) unit | RWZ2898 |
| NSP | 76 | Power secondly unit (KU/CA type) | RWZ2899 |
| NSP | 76 | Power secondly unit (SD type) | RWZ3015 |
| NSP | 77 | Power primary unit (KU/CA type) | RWZ2900 |
| NSP | 77 | Power primary unit (SD type) | RWZ3016 |
| | 78 | SUB 1 unit | RWZ2939 |
| NSP | 79 | VR unit | RWZ2961 |
| NSP | 80 | SUB 2 unit | RWZ2962 |
| NSP | 81 | Door IND. unit | RWZ2963 |
| NSP | 82 | Remote control reception unit (KU/CA type only) | RWZ3018 |
| | 83 | Line voltage selector (SD type only) | PSB1002 |

**NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.**




*1 : This nut is an accessory for the volume inside the VR unit (No. 79)

## 2.2 LOADING UNIT

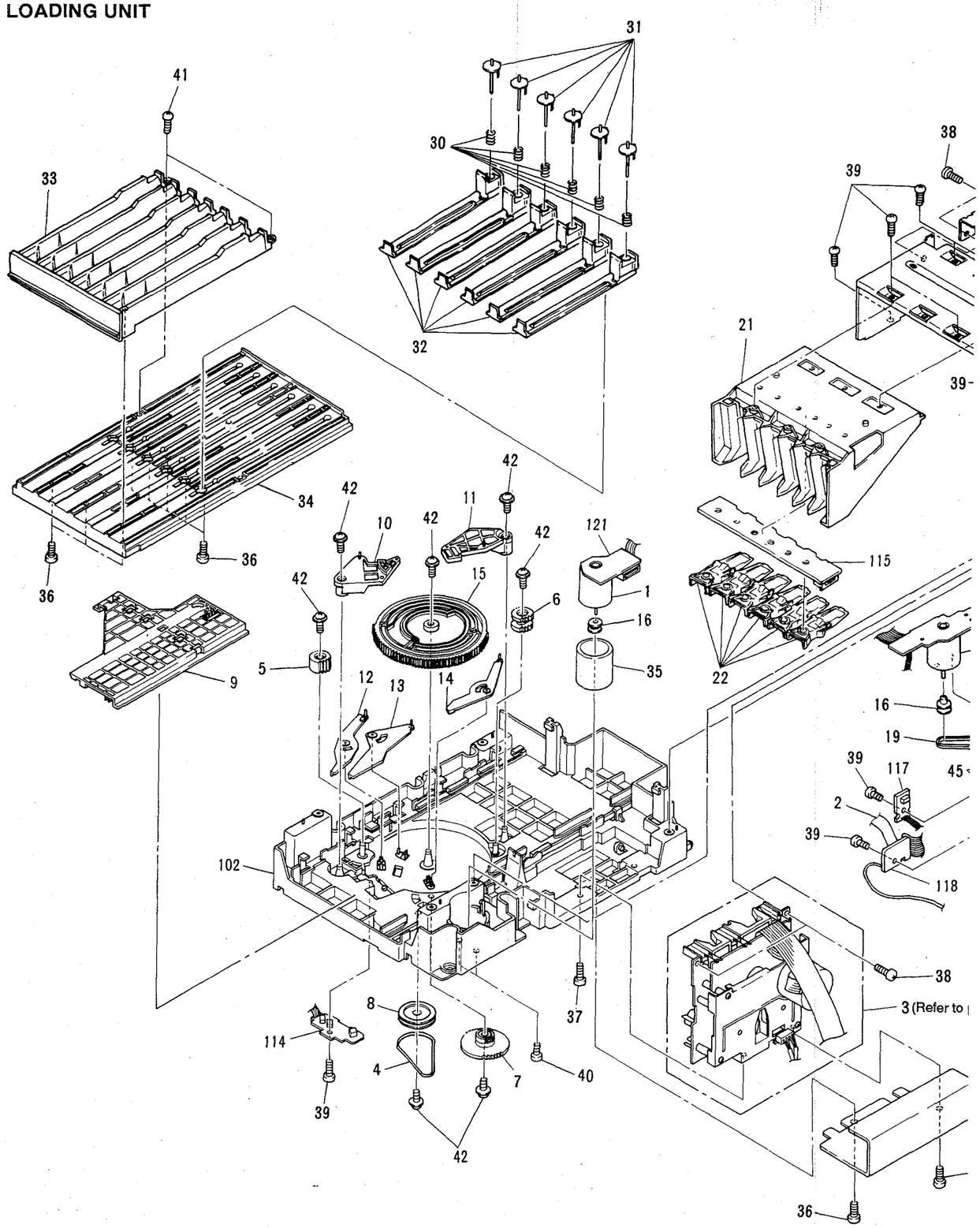
### Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Motor 1.32W | PXM1011 |
| | 2 | Lead card 9P | RDD1251 |
| ⊙ | 3 | Mechanism unit (DECK I) | RYM1195 |
| | 4 | O/C belt | REB1183 |
| | 5 | Drive gear (A) | RNK1774 |
| | 6 | Drive gear (B) | RNK1775 |
| | 7 | Drive gear (C) | RNK1776 |
| | 8 | Pully gear | RNK1777 |
| | 9 | Drive plate | RNK1781 |
| | 10 | Cam lever (A) | RNK1784 |
| | 11 | Cam lever (B) | RNK1785 |
| | 12 | Switch lever (A) | RNK1788 |
| | 13 | Switch lever (B) | RNK1789 |
| | 14 | Switch lever (C) | RNK1790 |
| | 15 | Cam gear | RNK1792 |
| | 16 | Motor pulley | PNW1634 |
| | 17 | Cassette pressure spring | RBH1247 |
| | 18 | Cassette pressure spring 2 | RBH1256 |
| | 19 | Drive belt | REB1184 |
| | 20 | Carrier felt | RED1024 |
| | 21 | Upper holder | RNK1558 |
| | 22 | Cassette arm | RNK1560 |
| | 23 | Selector | RNK1578 |
| | 24 | Cassette pressure (A) | RNK1579 |
| | 25 | Cassette pressure (B) | RNK1580 |
| | 26 | Cassette hold spring | RNK1773 |
| | 27 | Worm pulley | RNK1778 |
| | 28 | Loading gear | RNK1779 |
| | 29 | Rack base | RNK1780 |
| | 30 | Stopper pin spring | RBH1246 |
| | 31 | Stopper pin | RNK1771 |
| | 32 | Cassette holder | RNK1772 |
| | 33 | Tray | RNK1783 |
| | 34 | Tray base | RNK1791 |
| | 35 | Shield band | RNE1373 |
| | 36 | Screw | BBZ26P080FZK |
| | 37 | Screw | BBZ26P120FZK |
| | 38 | Screw | BBZ30P060FZK |
| | 39 | Screw | BBZ30P080FMC |
| | 40 | Screw | PMZ30P040FMC |
| | 41 | Screw | BPZ20P060FMC |
| | 42 | Screw | IPZ26P080FMC |
| | 43 | Washer | WA32D060D050 |
| | 44 | Washer | WA42D080D050 |
| | 45 | Washer | WT21D050D050 |
| | 46 | Screw | IBZ30P120FCC |

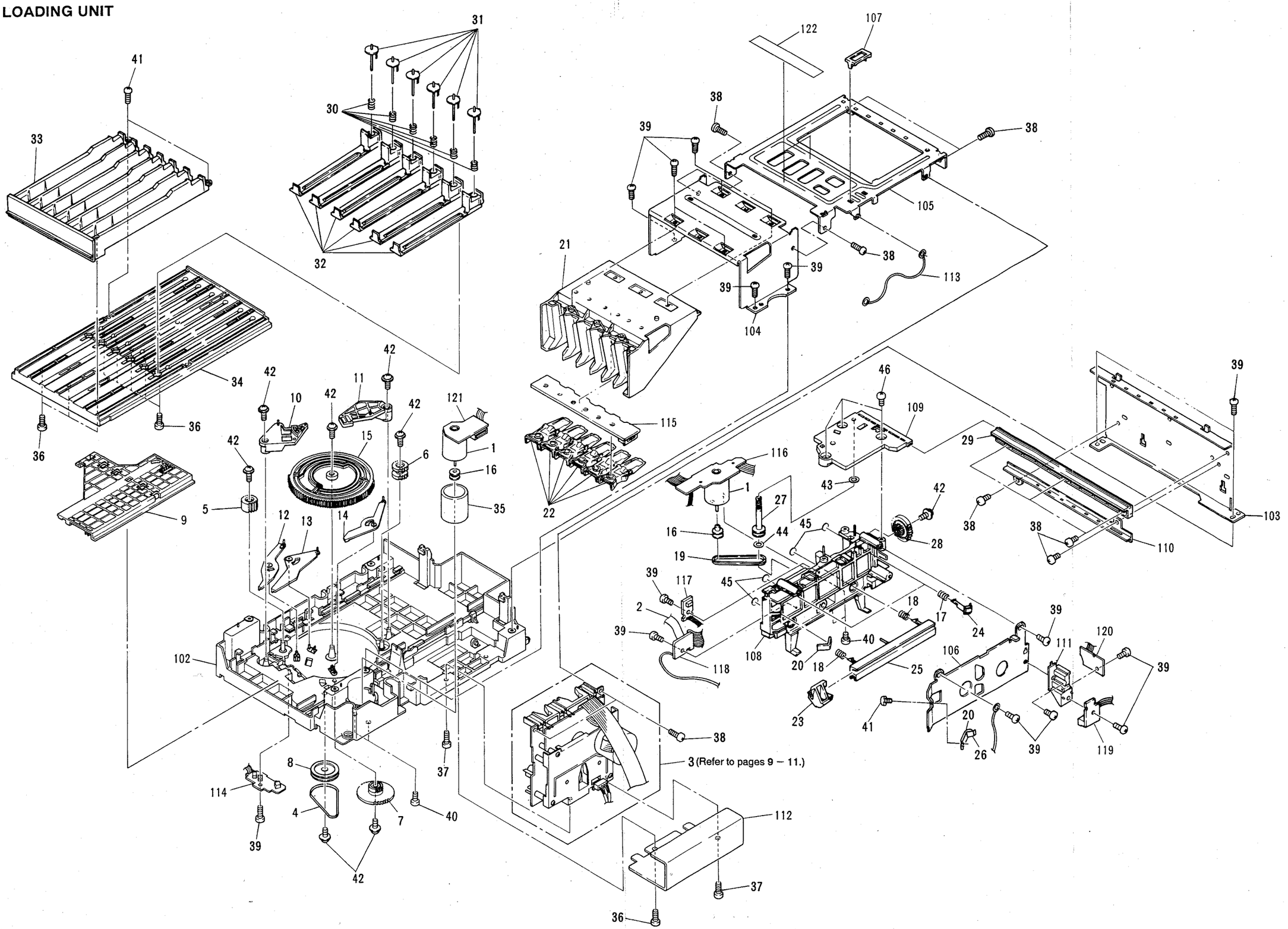
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 101 | ..... | |
| NSP | 102 | Bottom chassis | RNK1782 |
| NSP | 103 | Rear chassis | RNE1485 |
| NSP | 104 | Front chassis | RNE1486 |
| NSP | 105 | Upper chassis | RNE1524 |
| NSP | 106 | Carrier plate | RNE1488 |
| NSP | 107 | Lead holder | RNK1563 |
| NSP | 108 | Carrier | RNK1786 |
| NSP | 109 | Worm cover | RNK1787 |
| NSP | 110 | Sensing plate | RNK1793 |
| NSP | 111 | PCB holder | RNK1794 |
| NSP | 112 | Mechanism shield plate | RNE1306 |
| NSP | 113 | Earth lead unit | XDF – 504 |
| NSP | 114 | Tray SW unit | RWZ2493 |
| NSP | 115 | Upper unit | RWZ2494 |
| NSP | 116 | CA motor unit | RWZ2495 |
| NSP | 117 | Loading SW unit | RWZ2496 |
| NSP | 118 | Relay unit | RWZ2497 |
| NSP | 119 | Cassette holder unit | RWZ2498 |
| NSP | 120 | Carrier detect unit | RWZ2499 |
| NSP | 121 | Tray motor unit | RWZ2500 |
| NSP | 122 | Condenser sheet | VEX1023 |







## 2.2 LOADING UNIT



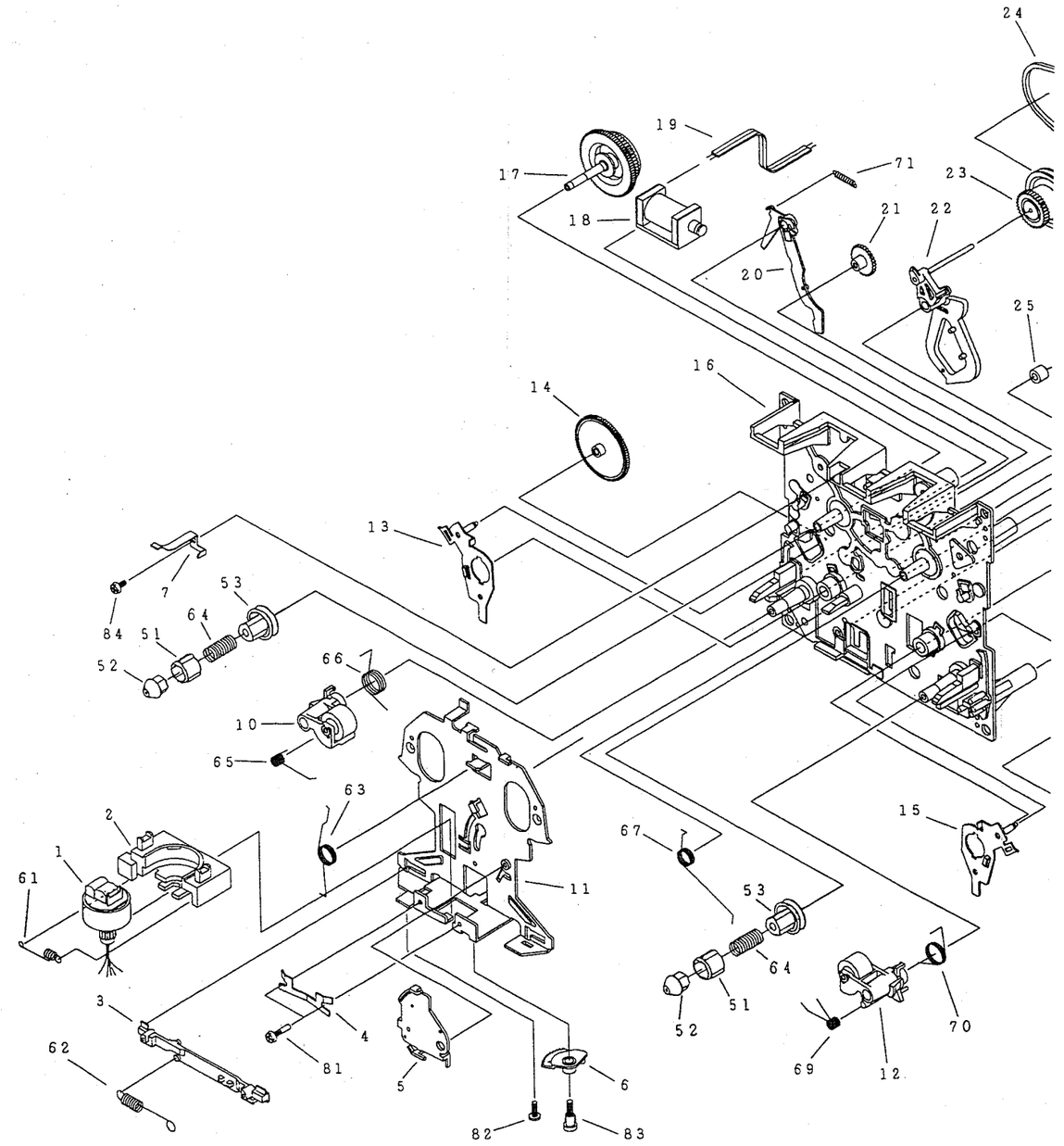
## 2.3 MECHANISM UNIT (DECK I)

### Parts List

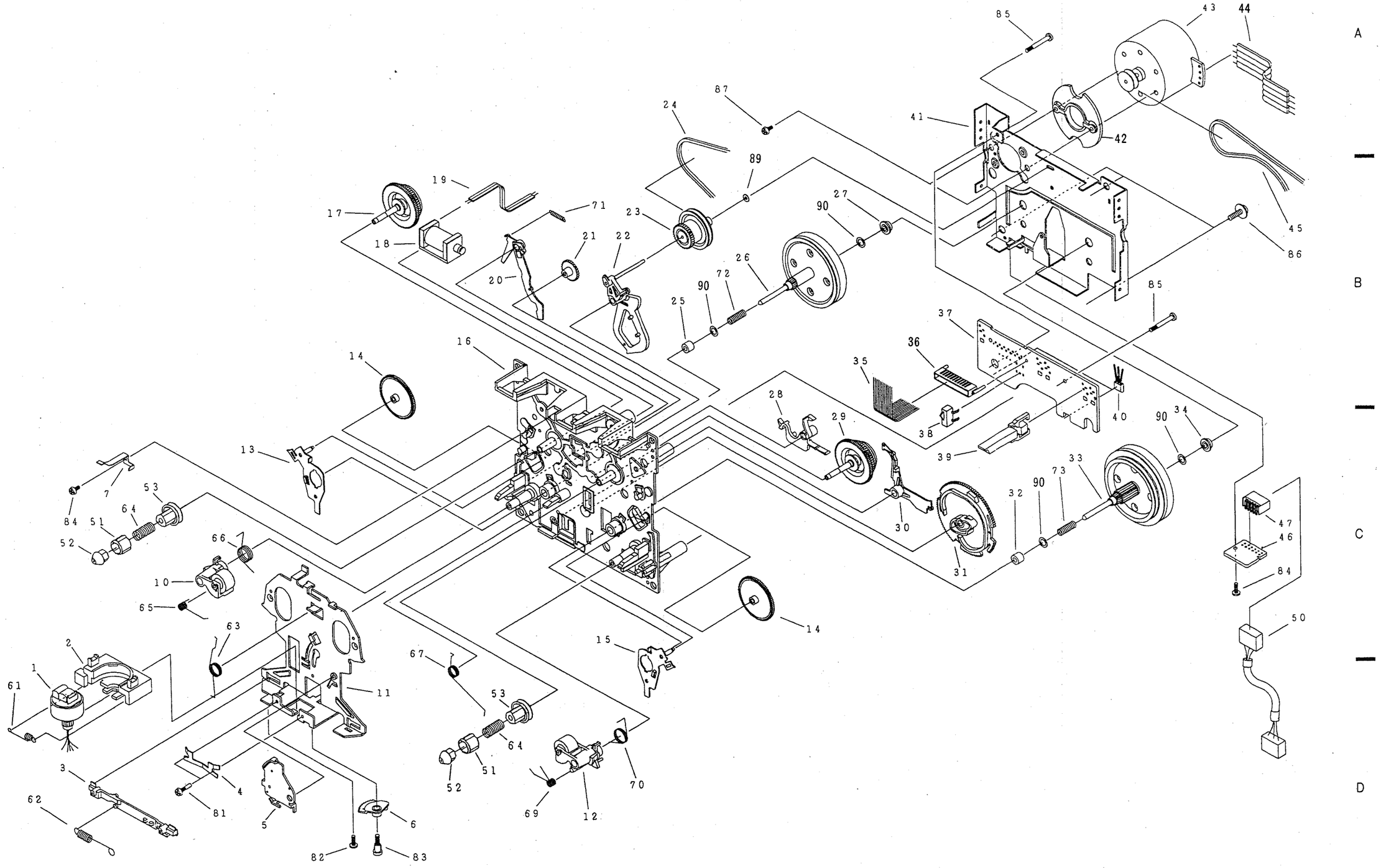
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Holder head assembly | RXA1477 |
| | 2 | Flame head | RNK1715 |
| | 3 | Lever head | RNK1716 |
| | 4 | Azimuth spring | RBK1006 |
| | 5 | Arm assist assembly | RXA1401 |
| | 6 | Gear arm head | RNK1717 |
| | 7 | Spring cassette | RBK1046 |
| | 8 | ..... | |
| | 9 | ..... | |
| | 10 | Pinch arm L assembly | RXA1403 |
| | 11 | Chassis head | RNE1437 |
| | 12 | Pinch arm R assembly | RXA1404 |
| | 13 | Arm play L | RNK1866 |
| | 14 | Gear play | RNK1867 |
| | 15 | Arm play R | RNK1868 |
| | 16 | Chassis OS. | RXA1411 |
| | 17 | Sub reel L assembly | RXA1491 |
| ⚠ | 18 | Solenoid | RXP1020 |
| | 19 | Wire | RDC1006 |
| | 20 | Arm RVS | RNK1721 |
| | 21 | Gear FF | RNK1723 |
| | 22 | Arm FR assembly | RXA1412 |
| | 23 | Pulley FR assembly | RXA1413 |
| | 24 | Belt FR | REB1158 |
| | 25 | Metal (Shaft holder) | RNG1048 |
| | 26 | Flywheel L assembly | RXA1423 |
| | 27 | Metal (Shaft holder) | RNG1005 |
| | 28 | Arm brake | RNK1724 |
| | 29 | Sub reel R assembly | RXA1408 |
| | 30 | Arm trigger | RNK1722 |
| | 31 | Gear cam | RNK1725 |
| | 32 | Metal (Shaft holder) | RNG1049 |
| | 33 | Flywheel R assembly | RXA1424 |
| | 34 | Metal (Shaft holder) | RNG1004 |
| | 35 | Wire (15P) | RDD1250 |
| NSP | 36 | Holder wire | RNK1683 |
| | 37 | P.C. board | RNP1435 |
| | 38 | Switch mode | RSN1022 |
| | 39 | Switch (leaf) | RSN1019 |
| | 40 | Hall IC. | DN6851A |
| | 41 | Bracket FW | RNE1438 |
| | 42 | Spacer | RNK1822 |
| | 43 | Motor assembly | RXM1062 |
| NSP | 44 | Wire | RDD1012 |
| | 45 | Belt main | REB1159 |
| | 46 | P.C. board | RNP1348 |
| | 47 | Housing | RKP1397 |
| | 48 | ..... | |
| | 49 | ..... | |
| | 50 | Wire head | RKP1502 |
| | 51 | Reel (A) | RNK1825 |
| | 52 | Reel (B) | RNK1826 |
| | 53 | Pulley reel | RNK1824 |
| | 61 | Spring | RBH1282 |
| | 62 | Spring | RBH1283 |
| | 63 | Spring | RBH1284 |
| | 64 | Spring | RBH1324 |
| | 65 | Spring | RBH1288 |
| | 66 | Spring | RBH1291 |
| | 67 | Spring | RBH1285 |
| | 68 | ..... | |
| | 69 | Spring | RBH1289 |
| | 70 | Spring | RBH1290 |
| | 71 | Spring | RBH1292 |
| | 72 | Spring (FWR) | RBH1061 |
| | 73 | Spring | RBH1325 |
| | 81 | Screw (For azimuth) | RBA1023 |
| | 82 | Screw | RBA1027 |
| | 83 | Screw | RBA1030 |
| | 84 | Screw | PCZ20P040FMC |
| | 85 | Screw | RBA1093 |
| | 86 | Screw | RBA1094 |
| | 87 | Screw | RBA1100 |
| | 88 | ..... | |
| | 89 | Washer | RBF1046 |
| | 90 | Washer | WA26D047D013 |



**Mechanism Unit (Deck I)**



## Mechanism Unit (Deck I)



## 2.4 MECHANISM UNIT (DECK II)

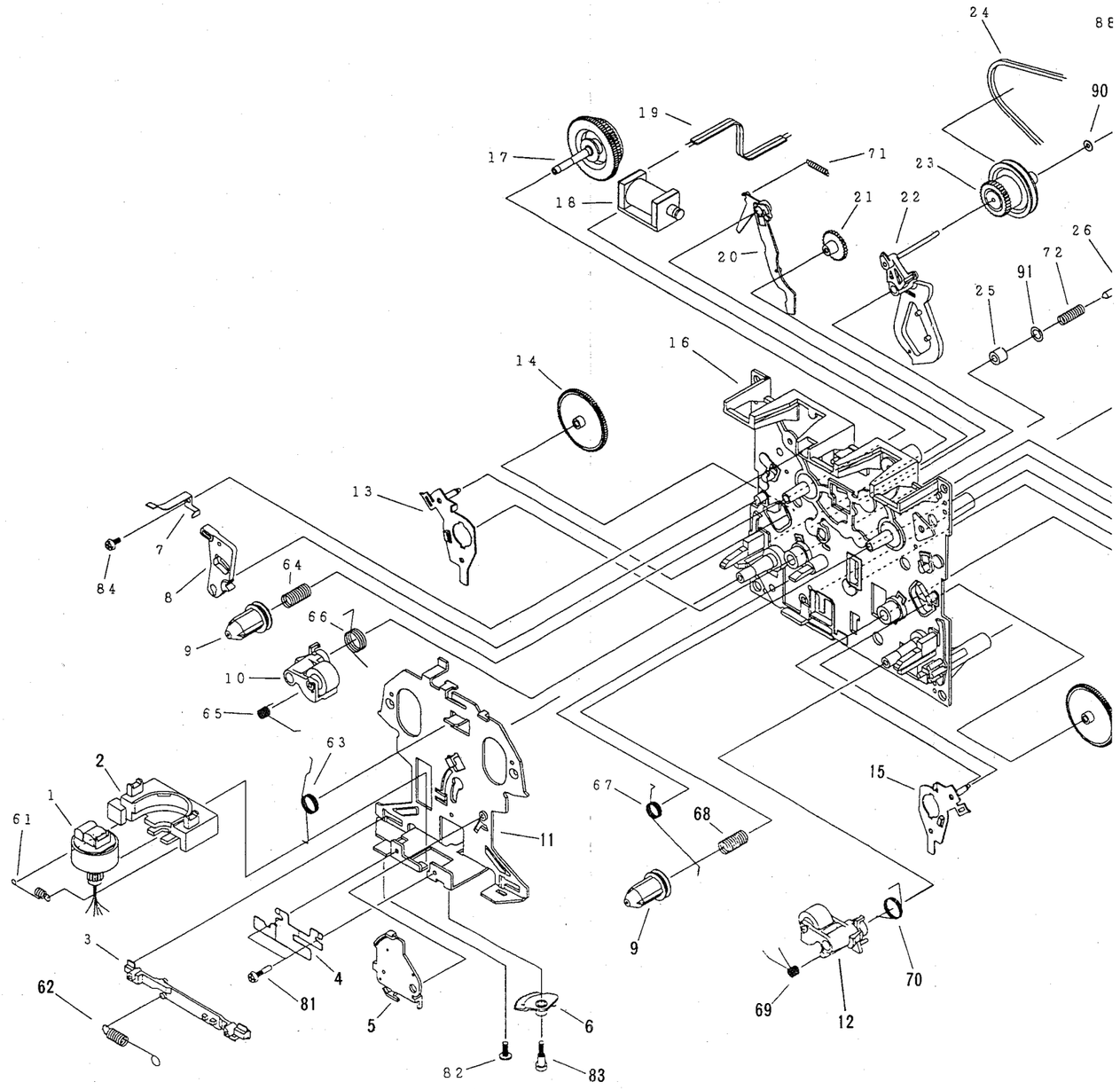
### Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Holder head assembly | RXA1400 |
| | 2 | Flame head | RNK1715 |
| | 3 | Lever head | RNK1716 |
| | 4 | Azimuth spring | RBK1045 |
| | 5 | Arm assist assembly | RXA1401 |
| | 6 | Gear arm head | RNK1717 |
| | 7 | Spring cassette | RBK1039 |
| | 8 | Eject lock | RNK1718 |
| | 9 | Cap reel | RNK1719 |
| | 10 | Pinch arm L assembly | RXA1403 |
| | 11 | Chassis head | RNE1437 |
| | 12 | Pinch arm R assembly | RXA1404 |
| | 13 | Arm play L | RNK1866 |
| | 14 | Gear play | RNK1867 |
| | 15 | Arm play R | RNK1868 |
| | 16 | Chassis OS. | RXA1411 |
| | 17 | Sub reel L assembly | RXA1407 |
| ⚠ | 18 | Solenoid | RXP1020 |
| | 19 | Wire | RDC1006 |
| | 20 | Arm RVS | RNK1721 |
| | 21 | Gear FF | RNK1723 |
| | 22 | Arm FR assembly | RXA1412 |
| | 23 | Pulley FR assembly | RXA1413 |
| | 24 | Belt FR | REB1158 |
| | 25 | Metal (Shaft holder) | RNG1048 |
| | 26 | Flywheel L assembly | RXA1423 |
| | 27 | Metal (Shaft holder) | RNG1005 |
| | 28 | Arm brake | RNK1724 |
| | 29 | Sub reel R assembly | RXA1408 |
| | 30 | Arm trigger | RNK1722 |
| | 31 | Gear cam | RNK1725 |
| | 32 | Metal (Shaft holder) | RNG1049 |
| | 33 | Flywheel R assembly | RXA1424 |
| | 34 | Metal (Shaft holder) | RNG1004 |
| | 35 | Wire (12P) | RDD1249 |
| NSP | 36 | Holder wire | RNK1683 |
| | 37 | P.C. board | RNP1436 |
| | 38 | Switch mode | RSN1022 |
| | 39 | Switch (leaf) | RSN1019 |
| | 40 | Hall IC. | DN6851A |

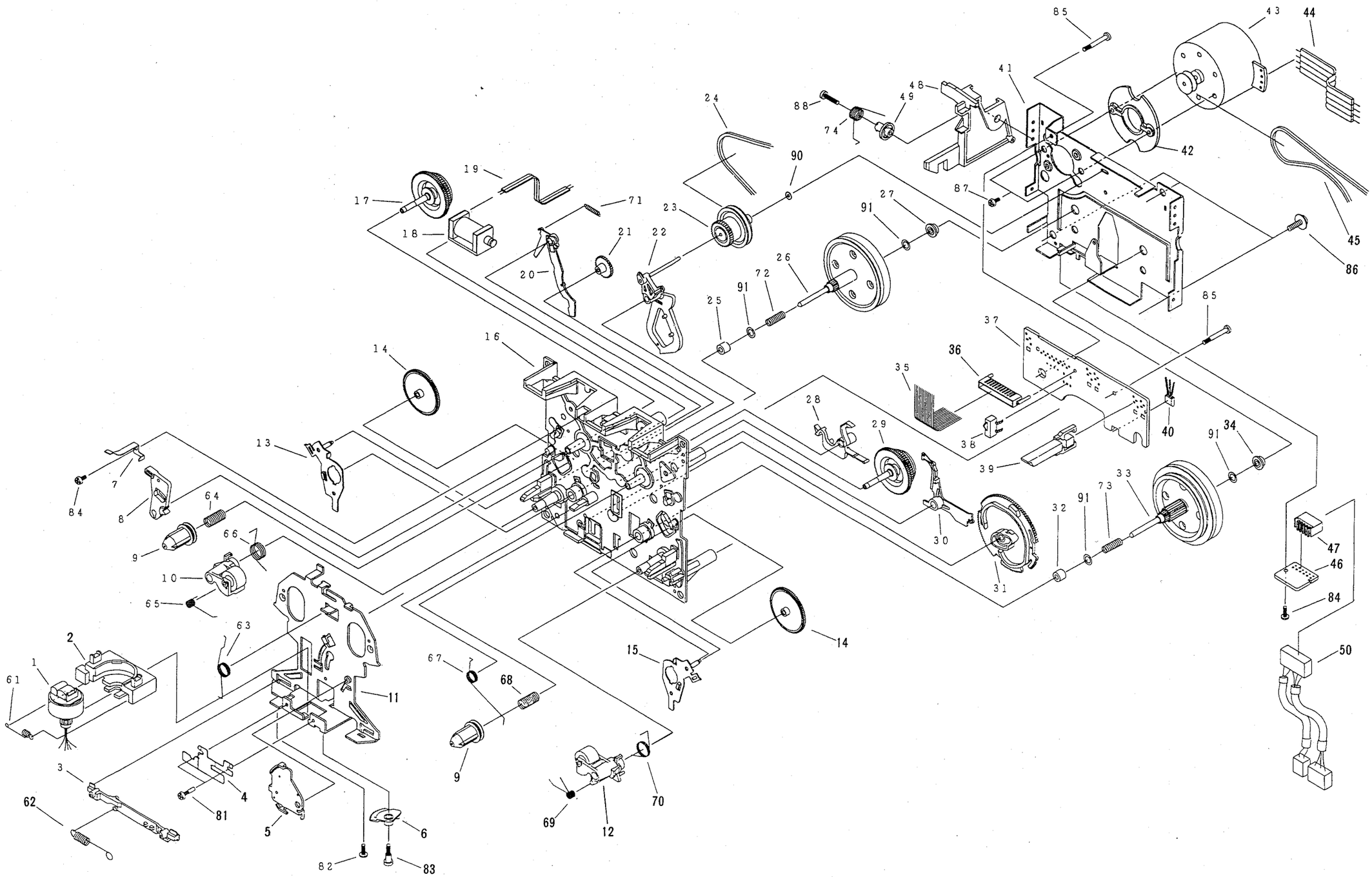
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 41 | Bracket FW. | RNE1438 |
| | 42 | Spacer | RNK1822 |
| | 43 | Motor assembly | RXM1062 |
| NSP | 44 | Wire | RDD1012 |
| | 45 | Belt main | REB1159 |
| | 46 | P.C. board | RNP1348 |
| | 47 | Housing | RKP1396 |
| | 48 | Eject lever L | RNK1702 |
| | 49 | Collar | RNK1704 |
| | 50 | Wire head | RKP1499 |
| | 61 | Spring | RBH1282 |
| | 62 | Spring | RBH1283 |
| | 63 | Spring | RBH1284 |
| | 64 | Spring | RBH1286 |
| | 65 | Spring | RBH1288 |
| | 66 | Spring | RBH1291 |
| | 67 | Spring | RBH1285 |
| | 68 | Spring | RBH1287 |
| | 69 | Spring | RBH1289 |
| | 70 | Spring | RBH1290 |
| | 71 | Spring | RBH1292 |
| | 72 | Spring (FWR) | RBH1061 |
| | 73 | Spring | RBH1325 |
| | 74 | Spring | RBH1294 |
| | 81 | Screw (For azimuth) | RBA1023 |
| | 82 | Screw | RBA1027 |
| | 83 | Screw | RBA1030 |
| | 84 | Screw | PCZ20P040FMC |
| | 85 | Screw | RBA1093 |
| | 86 | Screw | RBA1094 |
| | 87 | Screw | RBA1100 |
| | 88 | Screw | RBA1095 |
| | 89 | ..... | |
| | 90 | Washer | RBF1046 |
| | 91 | Washer | WA26D047D013 |



### Mechanism Unit (Deck II)

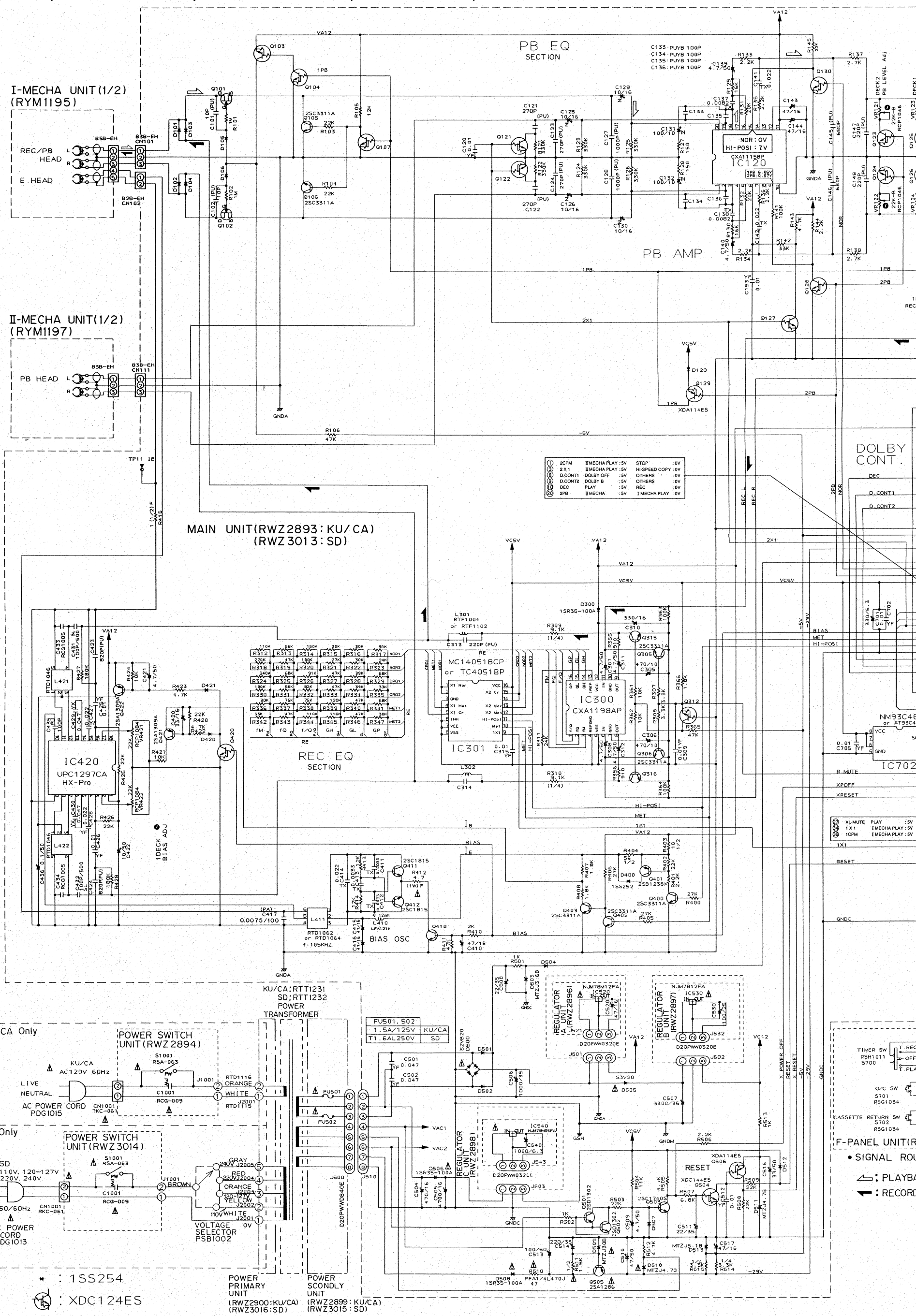


## Mechanism Unit (Deck II)



# 3. SCHEMATIC DIAGRAM

## 1. MAIN, POWER PRIMARY, POWER SECONDLY, REGULATOR C, REGULATOR B, REGULATOR A, F-PANEL, MECHANISM AN




**SCH—1** MAIN, POWER PRIMARY, POWER SECONDLY, REGULATOR C, REGULATOR B, REGULATOR A, F-PANEL, MECHANISM, POWER SWITCH UNIT

# , REGULATOR A, F-PANEL, MECHANISM AND POWER SWITCH UNIT

DOLBY B/C NR

PB AMP

1/f CORRECT CIRCUIT

1/f ANALYZER

LINE AMP

MS.METER CIRCUIT

DOLBY CONT.

SYSTEM CONT.

MECHANISM CONT.

O/C LD MOTOR DRIVER

CPM.SPEED CONT.

CPM DRIVE

SPEED CONT.

CPU SPEED CONT.

I-MECHA UNIT(2/2)

TO VR UNIT J640(RWZ2961) (→ SCH-2)

TO DOOR IND. UNIT J650(RWZ2963) (⇨ SCH-2)

TO REMOTE CONTROL RECEPTION UNIT J660(RWZ3018) (→ SCH-2)

KU/CA TYPE ONLY

RELAY UNIT (RWZ2497)

F-PANEL UNIT(RWZ 2895)

• SIGNAL ROUTE

⇦ : PLAYBACK SIGNAL

⇦ : RECORDING SIGNAL

LOADING SW UNIT (RWZ2496)

CASSETTE HOLDER UNIT (RWZ2498)

CARRIOR DETECT UNIT(RWZ2499)

CA MOTOR UNIT (RWZ2495)

TRAY SW UNIT (RWZ 2493)

TRAY MOTOR UNIT (RWZ2500)

UPPER UNIT (RWZ2494)

REGULATOR B UNIT (RWZ2897)

# ID POWER SWITCH UNIT

DOLBY B/C NR

TO VR UNIT J640(RWZ2961) (➡ SCH-2)

CXA1830S IC160

OFF:0.6V B:6.2V C:10.2V

PLAY:0.6V MPX OFF REC: 6.2V MPX ON REC:10.2V

R163 5.6K R164 5.6K
R165 24K R166 24K
R167 560 R168 560
R169 1K

C165 0.0022 C166 0.0022
C167 0.0022 C168 0.0022

I/f CORRECT CIRCUIT

LINE AMP

I/f ANALYZER

MS.METER CIRCUIT

TO DOOR IND. UNIT J650(RWZ2963) (➡ SCH-2)

IC701 NJU3718L

MECHANISM CONT.

IC700 PD3236A SYSTEM CONT.

O/C LD MOTOR DRIVER

IC900 TA7288P

SPEED CONT.

CPM.SPEED CONT.

CPM DRIVE

MUTE

TO SUB 2 UNIT J633(RWZ2962) (➡ SCH-2)

TO SUB1 UNIT CN602(RWZ2939) (➡ SCH-2)

TO SUB1 UNIT CN602(RWZ2939) (➡ SCH-2)

II-MECHA UNIT(2/2) (RYM1197)

I-MECHA UNIT(2/2)(RYM1195)

II - MECHA

CPU SPEED CONT.

SOL DRIVE

TO REMOTE CONTROL RECEPTION UNIT J660(RWZ3018) (➡ SCH-2) KU/CA TYPE ONLY

RELAY UNIT (RWZ2497)

LOADING SW UNIT (RWZ2496)

CASSETTE HOLDER UNIT (RWZ2498)

CARRIOR DETECT UNIT(RWZ2499)

CA MOTOR UNIT (RWZ2495)

TRAY MOTOR UNIT (RWZ2500)

TRAY SW UNIT (RWZ 2493)

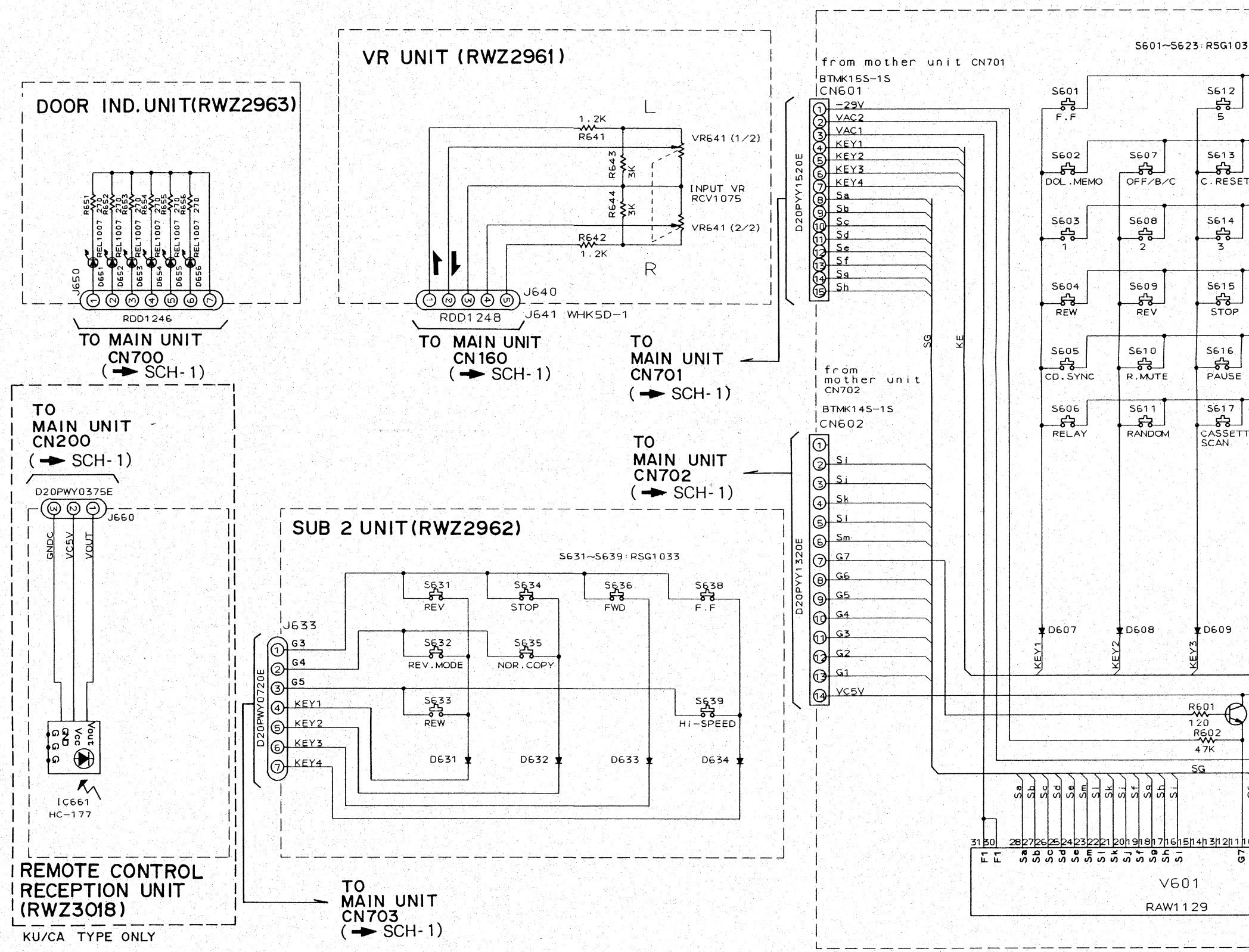
UPPER UNIT (RWZ2494)

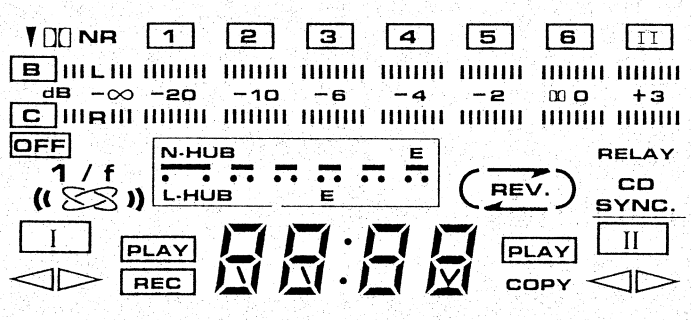
SCH-1

MAIN,POWER PRIMARY, POWER SECONDLY, REGULATOR C,REGULATOR B, REGULATOR A,F-PANEL, MECHANISM,POWER SWITCH UNIT

**SCH—1**

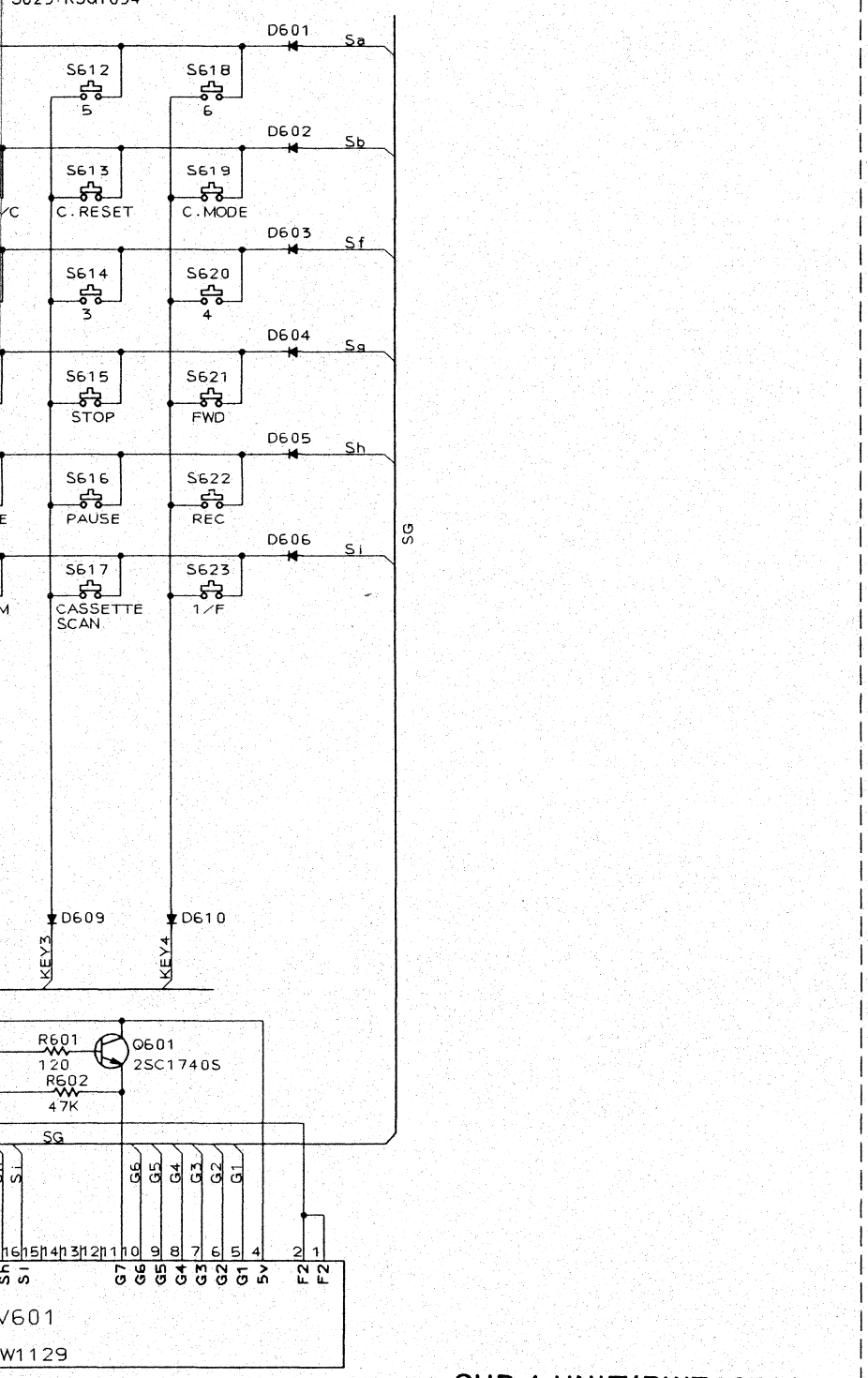
## 2. SUB 1, SUB 2, VR, DOOR IND. AND REMOTE CONTROL RECEPTION UNIT




| | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|
| P1 | 1 | 2 | 3 | 4 | 5 | 6 | II (S |
| P2 | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
| P3 | -20 | -10 | -6 | -4 | -2 | 0 | +3 |
| P4 | B8 | B9 | B10 | B11 | B12 | B13 | B14 |
| P5 | S7 | B18 | B17 | B16 | B15 | (REV.) | - |
| P6 | | B19 | h | h | col | h | - |
| P7 | 1 / f | B20 | g | g | g | g | RELAY |
| P8 | OFF | - | f | f | f | f | CD SYNC. |
| P9 | I | - | e | e | e | e | II (S |
| P10 | ▷ (S2) | - | d | d | d | d | ▷ (S |
| P11 | ◁ (S1) | - | c | c | c | c | ◁ (S |
| P12 | C | PLAY | b | b | b | b | PLAY |
| P13 | B | REC | a | a | a | a | COPY |
| P14 | NR | S9 | E | o o | E o o | | - |

**SCH-2** SUB 1, SUB 2, VR, DOOR IND. AND REMOTE CONTROL RECEPTION UNIT




SUB 1 UNIT(RWZ2939)

SCH-2

| | |
|---|---|
| | 16 |
| | ▯▯ (S5) |
| | B7 |
| | ⌖3 |
| | B14 |
| ) | – |
| | – |
| | RELAY |
| | CD SYNC. |
| | ▯▯ (S6) |
| | ▷ (S4) |
| | ◁ (S3) |
| | PLAY |
| | COPY |
| | – |

**Note:** Type 6

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ : DC voltage (V) in STOP mode unless otherwise noted.
   ⇦ mA or ← mA: DC current in STOP mode unless otherwise noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

   • SUB 1 UNIT
   S601 : ▶▶ MS (FF : DECK I)
   S602 : MEMORY (DOLBY NR)
   S603 : 1 (CASSETTE NUMBER)
   S604 : MS◀◀ (REW : DECK I)
   S605 : CD SYNCHRO
   S606 : RELAY (DECK I)
   S607 : OFF/B/C (DOLBY NR)
   S608 : 2 (CASSETTE NUMBER)
   S609 : ◀ (REV : DECK I)
   S610 : ● (REC MUTE : DECK I)
   S611 : RANDOM (DECK I)
   S612 : 5 (CASSETTE NUMBER)
   S613 : RESET (COUNTER)
   S614 : 3 (CASSETTE NUMBER)
   S615 : ■ (STOP : DECK I)
   S616 : ▮▮ (PAUSE : DECK I)
   S617 : SCAN (DECK I)
   S618 : 6 (CASSETTE NUMBER)
   S619 : MODE (COUNTER)
   S620 : 4 (CASSETTE NUMBER)
   S621 : ▶ (FWD : DECK I)
   S622 : ● (REC : DECK I)
   S623 : FLEX

   • SUB 2 UNIT
   S631 : ◀ (REV : DECK II)
   S632 : ⇄/⟲ (REVERSE MODE)
   S633 : MS◀◀ (REW : DECK II)
   S634 : ■ (STOP DECK II)
   S635 : NORMAL (COPY MODE I◀II)
   S636 : ▶ (FWD : DECK II)
   S638 : ▶▶MS (FF : DECK II)
   S639 : HI SPEED (COPY MODE I◀II)

   • F – PANEL UNIT
   S700 : DECK I TIMER REC – OFF – PLAY
   S701 : OPEN/CLOSE
   S702 : CASSETTE RETURN

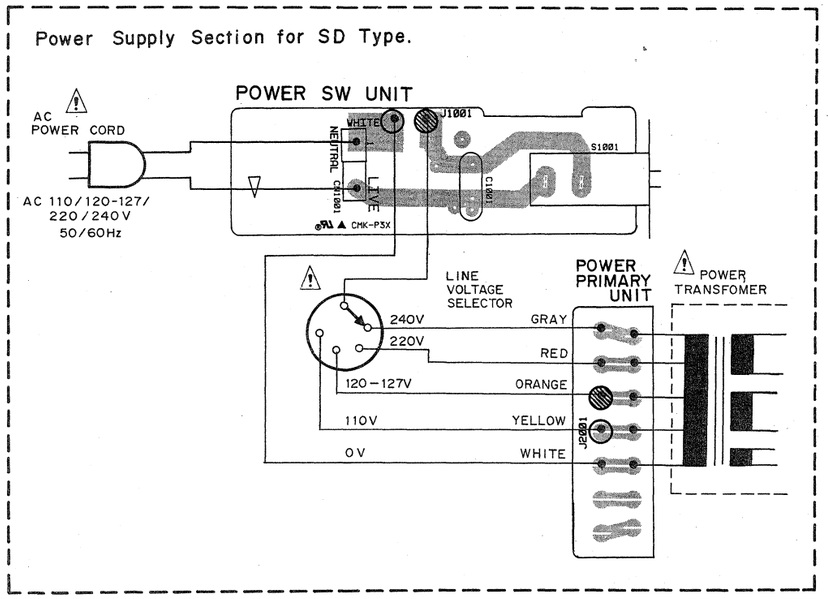
   • POWER SWITCH UNIT
   S1001 : POWER ON – OFF
9. **For SCH – □ on the schematic diagram.**
   • SCH – □ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

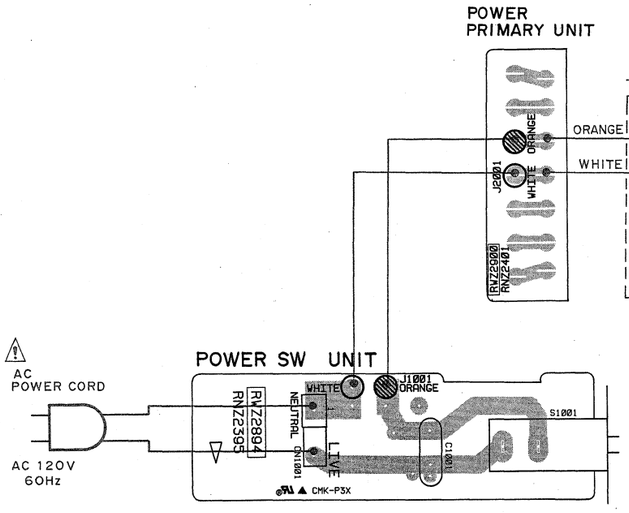
SUB 1, SUB 2, VR, DOOR IND. AND REMOTE CONTROL RECEPTION UNIT

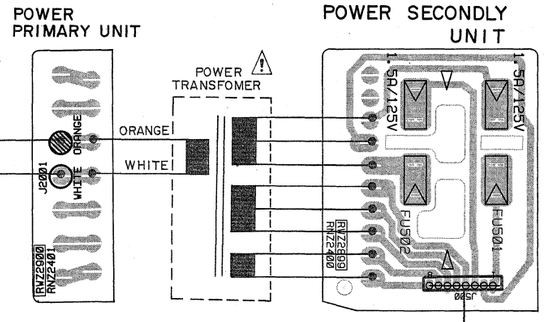
**SCH–2**

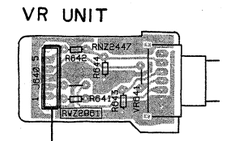
# 4. PCB CONNECTION DIAGRAM

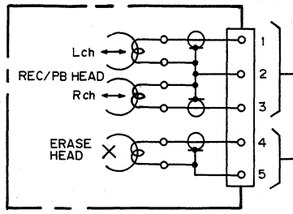
- View from component side

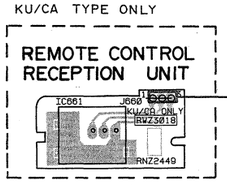


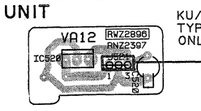



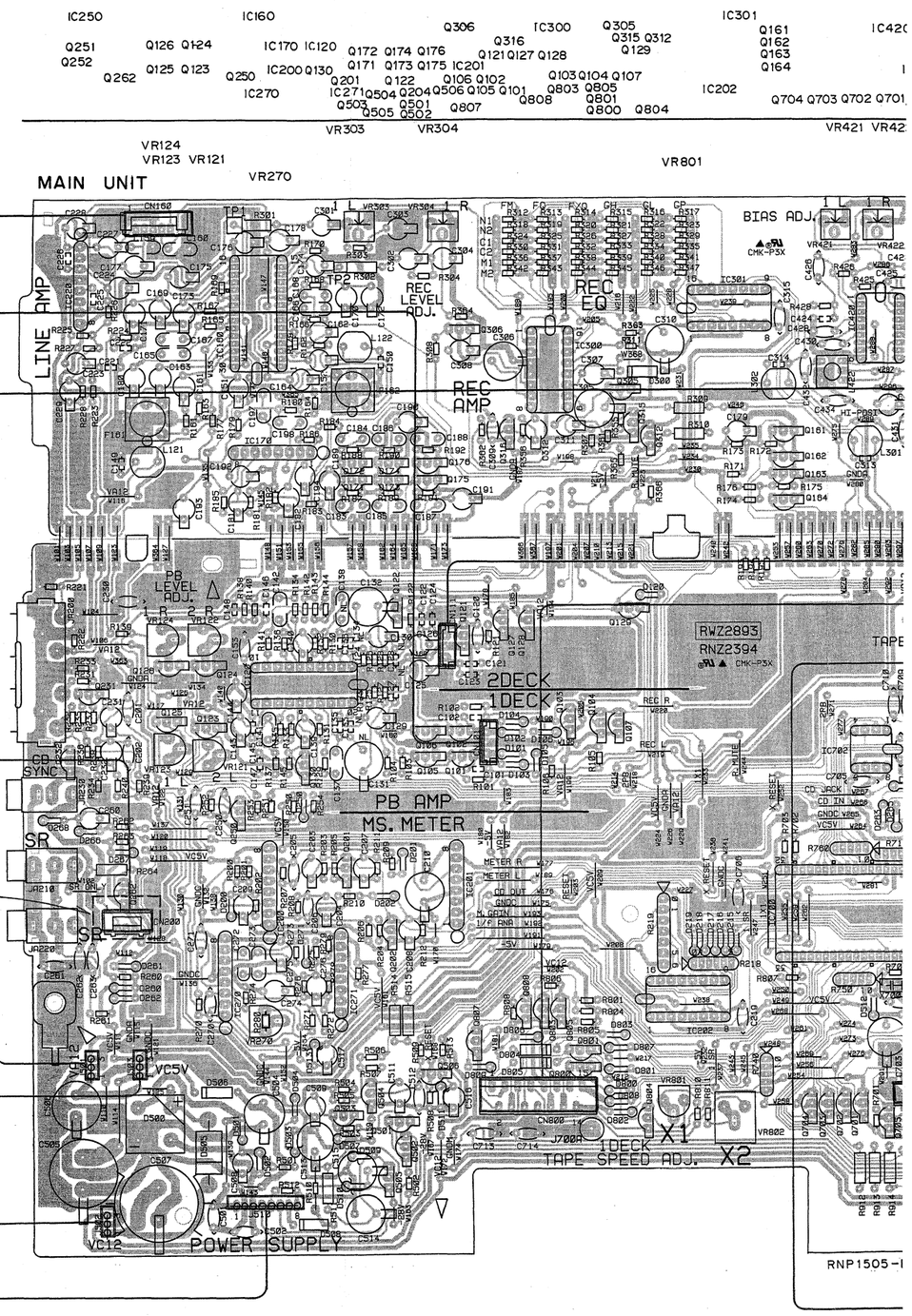



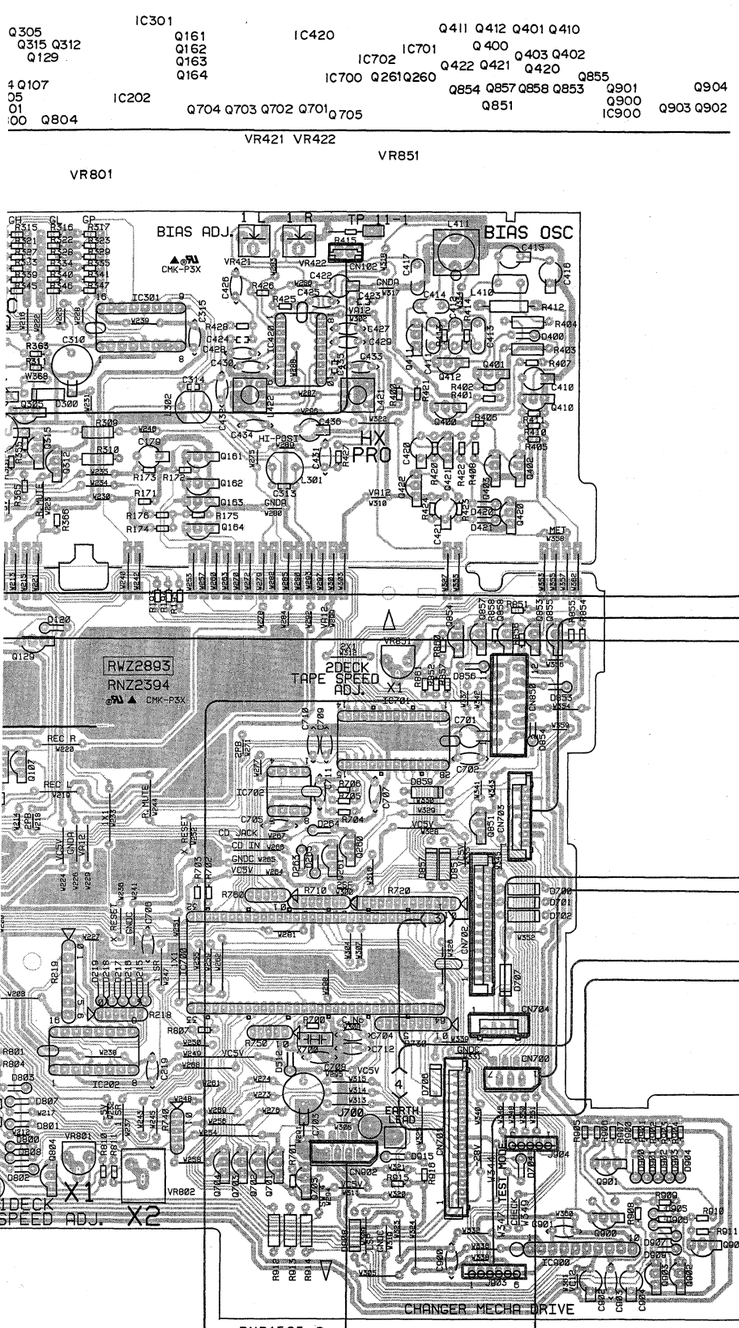



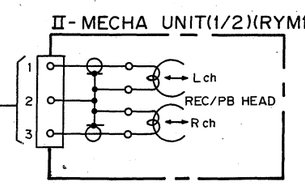



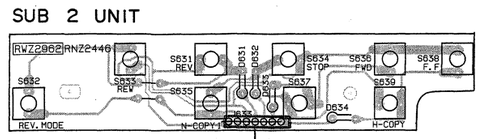



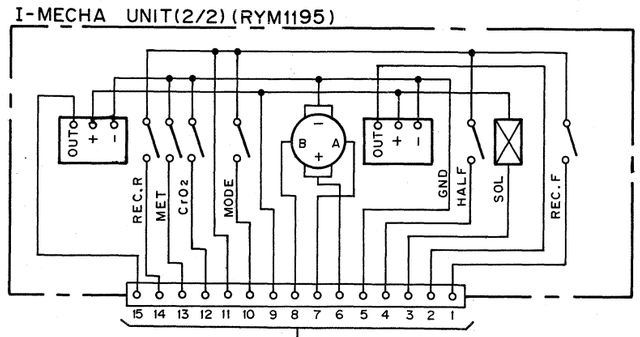



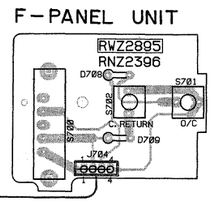



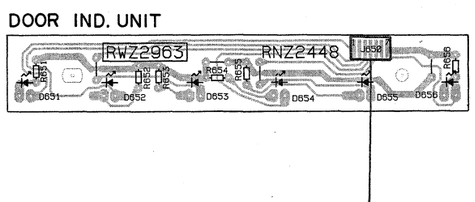


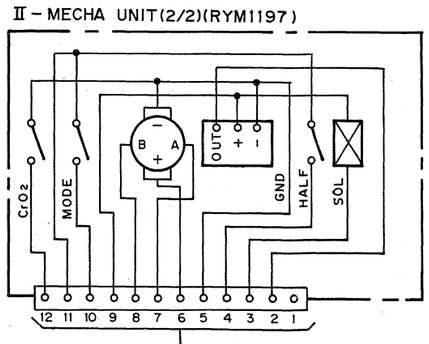



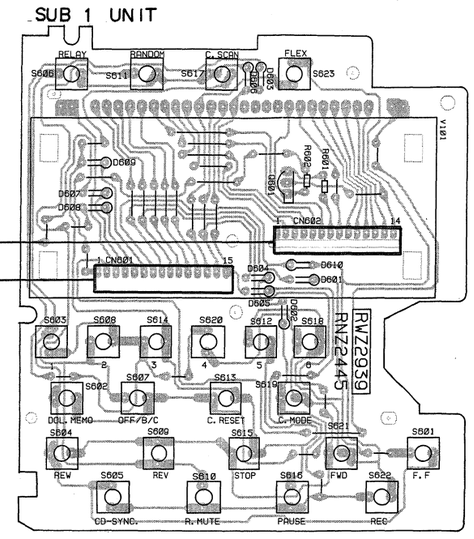



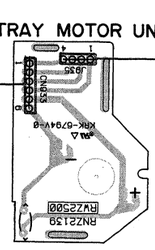



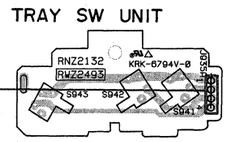



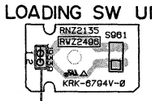



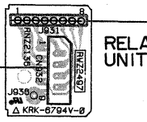



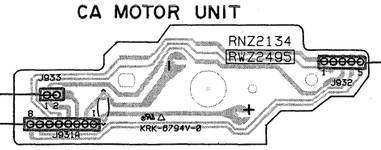



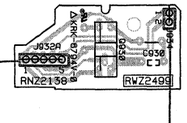



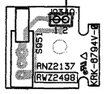



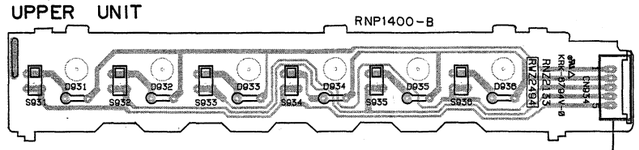



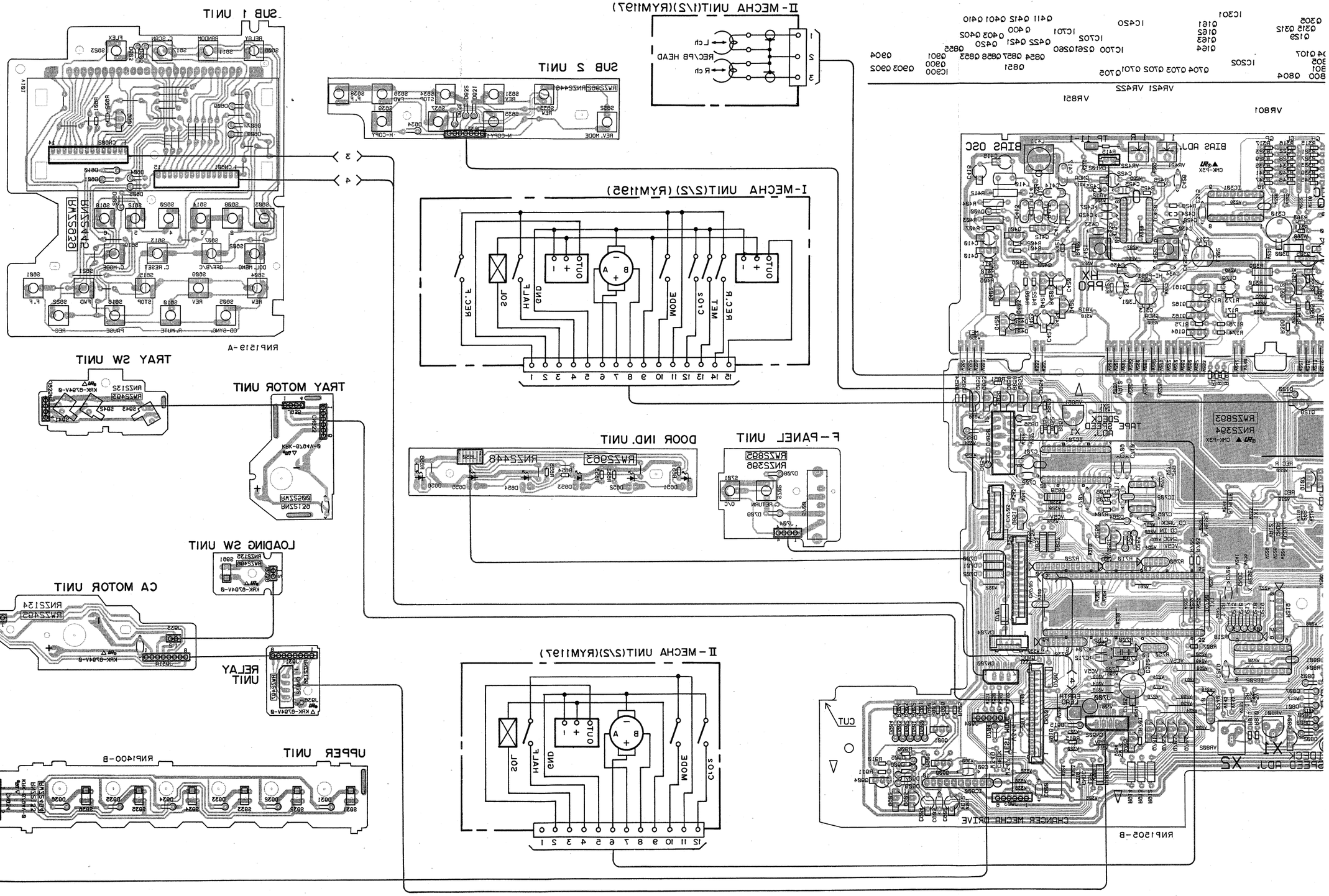



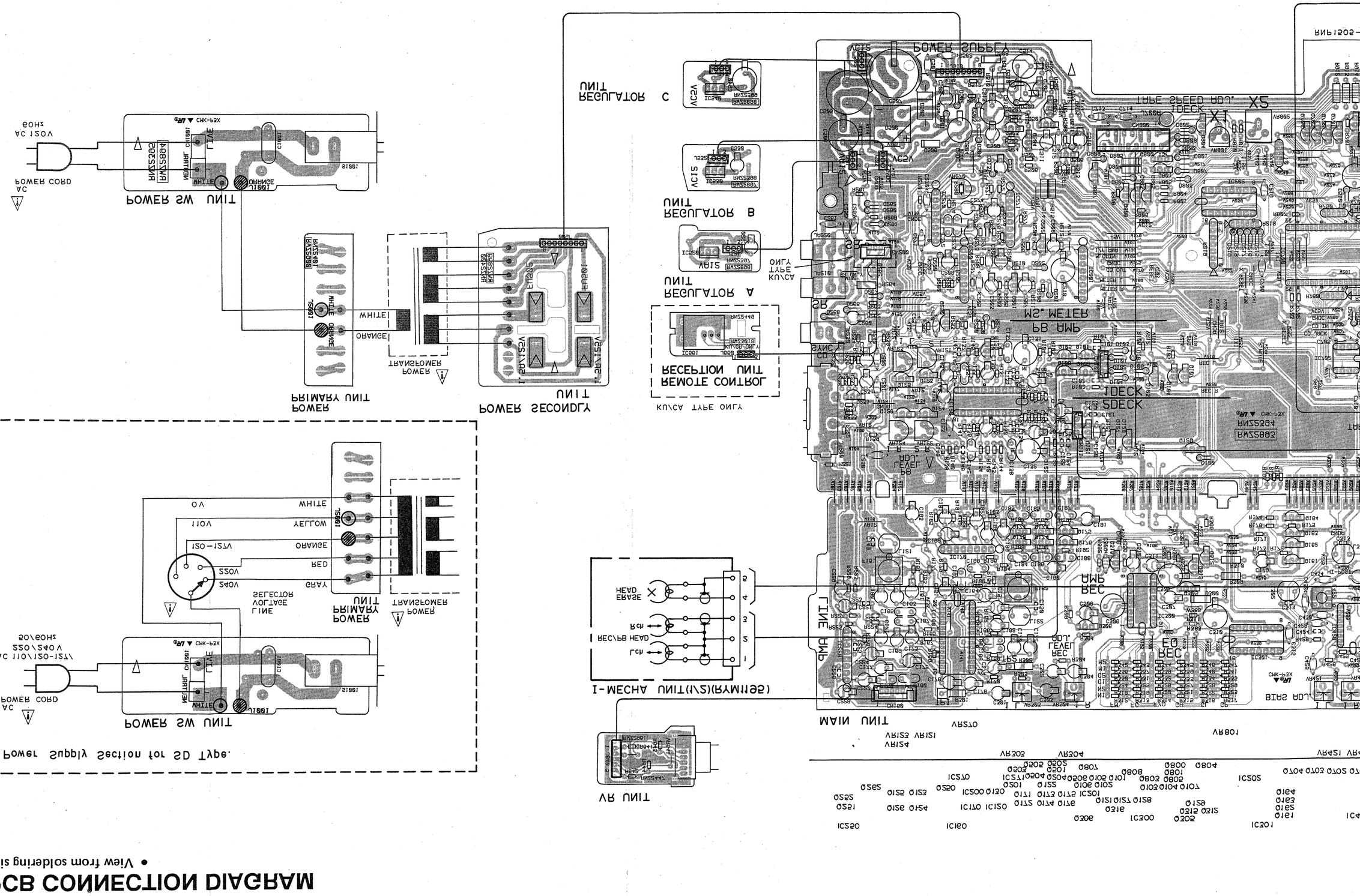

| P.C.B. pattern diagram indication | Corresponding part symbol | Part name |
|---|---|---|
| | | Transistor |
| | | FET |
| | | Diode |
| | | Zenner diode |
| | | LED |
| | | Varactor |
| | | Tact switch |
| | | Inductor |
| | | Coil |
| | | Transformer |
| | | Filter |
| | | Ceramic capacitor |
| | | Mylar capacitor |
| | | Styrol capacitor |
| | | Electrolytic capacitor (Non polarized) |
| | | Electrolytic capacitor (Noiseless) |
| | | Electrolytic capacitor (Polarized) |
| | | Electrolytic capacitor (Polarized) |
| | | Power capacitor |
| | | Semi-fixed resistor |
| | | Resistor array |
| | | Resistor |
| | | Resonator |
| | | Thermistor |

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Tal
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

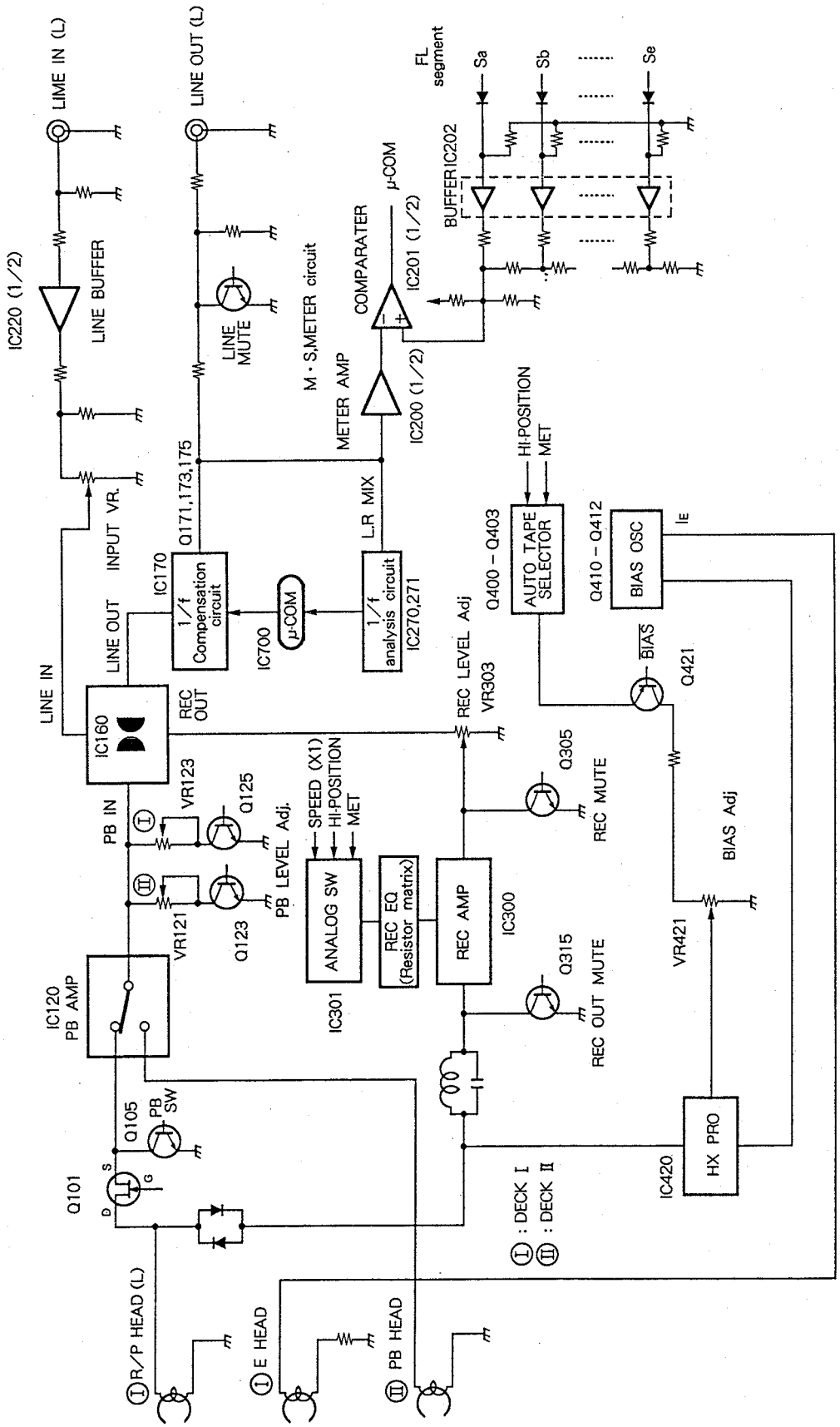

SUB 1 UNIT
SUB 2 UNIT
II-MECHA UNIT(1/2)(RYM197)
I-MECHA UNIT(2/2) (RYM195)
BIAS OSC
TRAY SW UNIT
TRAY MOTOR UNIT
DOOR IND. UNIT
F-PANEL UNIT
LOADING SW UNIT
CARRIER DETECT UNIT
CA MOTOR UNIT
RELAY UNIT
CASSETTE HOLDER UNIT
UPPER UNIT
II-MECHA UNIT(2/2)(RYM197)
CHANGER MECHA DRIVE
RNP1505-B
RNP1519-A
RNP1400-B

# 4. PCB CONNECTION DIAGRAM

• View from soldering side



# 5. BLOCK DIAGRAM



# 7. PCB PARTS LIST

**NOTES:**

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × $10^1$ → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × $10^3$ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × $10^1$ → 5621 ····· RN1/4PC 5 6 2 1 F

| Mark | No. | Description | Part No. |
|---|---|---|---|

## LIST OF ASSEMBLIES

### • For KU/CA type

| | | | |
|---|---|---|---|
| NSP | | MOTHER UNIT | RWM1605 |
| | | ├MAIN UNIT | RWZ2893 (*1) |
| NSP | | ├POWER SWITCH UNIT | RWZ2894 (*2) |
| NSP | | ├F-PANEL UNIT | RWZ2895 |
| NSP | | ├REGULATOR (A) UNIT | RWZ2896 |
| NSP | | ├REGULATOR (B) UNIT | RWZ2897 |
| NSP | | ├REGULATOR (C) UNIT | RWZ2898 |
| NSP | | ├POWER SECONDLY UNIT | RWZ2899 (*3) |
| NSP | | └POWER PRIMARY UNIT | RWZ2900 (*4) |
| NSP | | SUB UNIT | RWM1623 |
| | | ├SUB 1 UNIT | RWZ2939 |
| NSP | | ├VR UNIT | RWZ2961 |
| NSP | | ├SUB 2 UNIT | RWZ2962 |
| NSP | | ├DOOR IND. UNIT | RWZ2963 |
| NSP | | └REMOTE CONTROL RECEPTION UNIT | RWZ3018 |

### • For SD type

| | | | |
|---|---|---|---|
| NSP | | MOTHER UNIT | RWM1638 |
| | | ├MAIN UNIT | RWZ3013 (*1) |
| NSP | | ├POWER SWITCH UNIT | RWZ3014 (*2) |
| NSP | | ├F-PANEL UNIT | RWZ2895 |
| NSP | | ├REGULATOR (A) UNIT | RWZ2896 |
| NSP | | ├REGULATOR (B) UNIT | RWZ2897 |
| NSP | | ├REGULATOR (C) UNIT | RWZ2898 |
| NSP | | ├POWER SECONDLY UNIT | RWZ3015 (*3) |
| NSP | | └POWER PRIMARY UNIT | RWZ3016 (*4) |
| NSP | | SUB UNIT | RWM1639 |
| | | ├SUB 1 UNIT | RWZ2939 |
| NSP | | ├VR UNIT | RWZ2961 |
| NSP | | ├SUB 2 UNIT | RWZ2962 |
| NSP | | └DOOR IND. UNIT | RWZ2963 |

### • For KU/CA and SD types

| | | | |
|---|---|---|---|
| NSP | | MECHANISM BOARD UNIT | RWM1469 |
| NSP | | ├TRAY SW UNIT | RWZ2493 |
| NSP | | ├UPPER UNIT | RWZ2494 |
| NSP | | ├CA MOTOR UNIT | RWZ2495 |
| NSP | | ├LOADING SW UNIT | RWZ2496 |
| NSP | | ├RELAY UNIT | RWZ2497 |
| NSP | | ├CASSETTE HOLDER UNIT | RWZ2498 |
| NSP | | ├CARRIER DETECT UNIT | RWZ2499 |
| NSP | | └TRAY MOTOR UNIT | RWZ2500 |

**NOTE:**

*1 MAIN UNIT
Although RWZ3013 and RWZ2893 are different in part number, they consist of the same components.

*2 POWER SWITCH UNIT
Although RWZ3014 and RWZ2894 are different in part number, they consist of the same components.

*3 POWER SECONDLY UNIT
Although RWZ3015 and RWZ2899 are different in part number, they consist of the same components.

*4 POWER PRIMARY UNIT
Although RWZ3016 and RWZ2900 are different in part number, they consist of the same components.

## MAIN UNIT

### SEMICONDUCTORS

| | |
|---|---|
| IC201, IC271 | BA10393N |
| IC170, IC200, IC220, IC270 | BA15218N |
| IC120 | CXA1115BP |
| IC300 | CXA1198AP |
| IC160 | CXA1330S |
| IC301 | MC14051BCP |
| IC701 | NJU3718L |
| IC702 | NM93C46N |
| IC700 | PD3236A |
| IC900 | TA7288P |
| IC202 | TC4050BP |
| IC420 | UPC1297CA |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | Q805, Q855 | | 2SA1283 |
| ⚠ | Q505 | | 2SA1286 |
| | Q250, Q421, Q422, Q804, Q854, Q900, Q901 | | 2SA1309A |
| | Q401 | | 2SB1238X |
| | Q503, Q904 | | 2SC1740S |
| | Q411, Q412 | | 2SC1815 |
| | Q807, Q857 | | 2SC3246 |
| | Q105, Q106, Q305, Q306, Q400, Q402, Q403 | | 2SC3311A |
| | Q501, Q502 | | 2SD1302 |
| | Q231, Q232, Q315, Q316, Q410 | | 2SD2144S |
| | Q101, Q102 | | 2SK373 |
| | Q260 | | DTA114TS |
| | Q701-Q704 | | DTC114TS |
| | Q201, Q202 | | DTC124TS |
| | Q808, Q858, Q902, Q903 | | DTC143ES |
| | Q129, Q506, Q705 | | XDA114ES |
| | Q103, Q261, Q312, Q800, Q801, Q851 | | XDA124ES |
| | Q104, Q107, Q121-Q128, Q130, Q161-Q164, Q171-Q176, Q262, Q420, Q803, Q853 | | XDC124ES |
| | Q504 | | XDC144ES |
| | D700-D702, D706, D707, D804, D805, D851, D857, D859, D908 | | 1S2473 |
| | D300 | | 1SR35-100A |
| ⚠ | D506, D508 | | 1SR35-100A |
| | D400, D806, D856 | | 1SS252 |
| | D101-D106, D120, D200-D202, D215-D219, D250, D260-D268, D271, D420, D421, D501, D502, D504, D507, D512, D704, D800-D803, D807-D809, D853, D854, D900-D904, D906, D909, D915 | | 1SS254 |
| | D503, D907 | | MTZJ3.6B |
| ⚠ | D509 | | MTZJ30B |
| ⚠ | D510 | | MTZJ4.7B |
| | D511 | | MTZJ4.7B |
| | D513 | | MTZJ5.1B |
| | D905 | | MTZJ5.6B |
| ⚠ | D500 | | S2VB20 |
| ⚠ | D505 | | S3V20 |

## COILS AND FILTERS

| | | |
|---|---|---|
| L410 | | LFA121K |
| L421, L422 | (L=4.6mH, Q=25, F=105KH) | RTD1046 |
| L411 | (F=105K) | RTD1062 |
| L301, L302 | (L=10mH(79.6KHZ), Q=25) | RTF1004 |
| L121, L122 | (L=472J) | RTF1098 |
| F161, F162 | | RTF1062 |

## CAPACITORS

| | | |
|---|---|---|
| C431, C432 | | CCCSL101K500 |
| C709-C711 | | CCDSL151J50 |
| C101, C102, C221, C222 | | CCPUSL100J50 |
| C125, C126, C129, C130 | | CEANL100M16 |
| C131, C132 | | CEANL101M10 |
| C151, C152, C177, C178, C203, C204, | | CEAS010M50 |
| C223, C224, C260, C303, C304 | | |
| C189-C191 | | CEAS0R1M50 |
| C161-C164, C175, C227, C228, C422, C902 | | CEAS100M50 |
| C192, C274, C275 | | CEAS101M16 |
| C513 | | CEAS101M50 |
| C506 | | CEAS102M35 |
| C210, C703 | | CEAS102M6R3 |
| C508, C511, C904 | | CEAS220M35 |
| C514 | | CEAS221M35 |
| C179, C180, C420 | | CEAS330M16 |
| C516 | | CEAS330M50 |
| C310 | | CEAS331M16 |
| C701 | | CEAS331M6R3 |
| C507 | | CEAS332M35 |
| C143, C144, C176, C181, C182, C209, C229, C410, C415, C416, C517 | | CEAS470M16 |
| C515 | | CEAS470M50 |
| C305, C306 | | CEAS471M10 |
| C504 | | CEAS471M16 |
| C505 | | CEAS472M16 |
| C139, C140, C193, C194, C301, C302, C307, C308, C311, C312, C421, C509 | | CEAS4R7M50 |
| C231, C232, C436 | | CEASR10M50 |
| C169, C170, C207, C208 | | CEASR22M50 |
| C171-C174 | | CEASR33M50 |
| C276 | | CEASR47M50 |
| C183, C184 | | CFTXA152J50 |
| C165-C168 | | CFTXA222J50 |
| C141, C142, C414 | | CFTXA223J50 |
| C185, C186 | | CFTXA272J50 |
| C272, C273, C411-C413 | | CFTXA332J50 |
| C197, C198 | | CFTXA471J50 |
| C159, C160, C187, C188 | | CFTXA562J50 |
| C137, C138 | | CFTXA822J50 |
| C429, C430 | | CGCYX473K25 |
| C270 | | CKCYB101K50 |
| C205, C206 | | CKCYB821K50 |
| C120, C153, C250, C251, C261-C263, C309, C315, C425, C426, C512, C702, C704-C708, C712 | | CKCYF103Z50 |
| C427, C428 | | CKCYF223Z50 |
| C201, C202, C219, C230, C271, C501, C502, C713, C714, C900, C901, C903 | | CKCYF473Z50 |
| C133-C136, C225, C226, C435 | | CKPUYB101K50 |
| C127, C128 | | CKPUYB102K50 |
| C147, C148, C313, C314 | | CKPUYB221K50 |
| C121-C124 | | CKPUYB271K50 |
| C149, C150 | | CKPUYB471K50 |
| C145, C146 | | CKPUYB681K50 |
| C423, C424 | | CKPUYB821K50 |
| C417 | | CQPA752J100 |
| C433, C434 | (C=430P, V(DC)=500) | RCG1005 |

## RESISTORS

| | | |
|---|---|---|
| R720 | (47K) | RA12T473J |
| R760 | (2.2K) | RA4T222J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | R740, R750 (22K) | | RA4T223J |
| | R218 (22K) | | RA5T223J |
| | R710 (22K) | | RA6T223J |
| | R730 (47K) | | RA8T473J |
| | R219 (11K/22K) | | RCX1020 |
| | R415 | | RD1/2LF010J |
| ⚠ | R511 | | RD1/2PM152J |
| | R403 | | RD1/2PMF100J |
| | R404 | | RD1/2PMF560J |
| | R912-R914 | | RD1/4PM102J |
| | R264 | | RD1/4PM221J |
| | R514, R515 | | RD1/4PM332J |
| | R301, R302 | | RD1/4PM472J |
| | R309, R310 | | RD1/4PM912J |
| ⚠ | R510 (47Ω) | | RFA1/4L470J |
| | R412 (4.7Ω) | | RS1LMF4R7J |
| | VR802 (10K) | | RCP1045 |
| | VR121-VR124 (22K) | | RCP1046 |
| | VR303, VR304, VR421, VR422 (22K) | | RCP1084 |
| | VR801, VR851 (15K) | | RCP1090 |
| | OTHER RESISTORS | | RD1/6PM□□□J |
| **OTHERS** | | | |
| | CN700 CONNECTOR(7P) | | HLEM7S-1 |
| | CN902 CONNECTOR(9P) | | HLEM9S-1 |
| | CN850 CONNECTOR(12P) | | KPE12 |
| | CN800 CONNECTOR(15P) | | KPE15 |
| | JA200 PIN JACK(4P) | | RKB1001 |
| | JA210, JA220 JACK | | RKN1004 |
| | JA230 MINI JACK | | RKN1014 |
| | X700 CERAMIC RESONATOR(4.19MHz) | | VSS1014 |

## POWER SWITCH UNIT

**SWITCHES**

| | | |
|---|---|---|
| ⚠ | S1001 | RSA-063 |

**CAPACITORS**

| | | |
|---|---|---|
| ⚠ | C1001 (10000pF) | RCG-009 |

**OTHERS**

| | | |
|---|---|---|
| ⚠ | TERMINAL | RKC-061 |

## F-PANEL UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | D708, D709 | 1SS254 |

**SWITCHES**

| | | |
|---|---|---|
| | S701, S702 | RSG1034 |
| | S700 | RSH1011 |

## REGULATOR (A) UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| ⚠ | IC520 | NJM78M12FA |

**CAPACITORS**

| | | |
|---|---|---|
| | C520 | CEAS470M16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|

## REGULATOR (B) UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| ⚠ | IC530 | NJM7812FA |

**CAPACITORS**

| | | |
|---|---|---|
| | C530 | CEAS101M25 |

## REGULATOR (C) UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| ⚠ | IC540 | NJM78M05FA |

**CAPACITORS**

| | | |
|---|---|---|
| | C540 | CEAS102M6R3 |

## POWER SECONDLY UNIT

Power secondly unit has no service part.

## POWER PRIMARY UNIT

Power primary unit has no service part.

## SUB 1 UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | Q601 | 2SC1740S |
| | D601-D610 | 1SS254 |

**SWITCHES**

| | | |
|---|---|---|
| | S601-S623 | RSG1034 |

**RESISTORS**

| | | |
|---|---|---|
| | ALL RESISTORS | RD1/6PM□□□J |

**OTHERS**

| | | |
|---|---|---|
| | CN602 CONNECTOR(14P) | BTMK14S |
| | CN601 CONNECTOR(15P) | BTMK15S |
| | V601 FL INDICATOR TUBE | RAW1129 |

## VR UNIT

**RESISTORS**

| | | |
|---|---|---|
| | VR641 | RCV1075 |
| | OTHER RESISTORS | RD1/6PM□□□J |

## SUB 2 UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | D631-D634 | 1SS254 |

**SWITCHES**

| | | |
|---|---|---|
| | S631-S636, S638, S639 | RSG1033 |

## DOOR IND. UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | D651-D656 | REL1007 |

**RESISTORS**

| | | |
|---|---|---|
| | ALL RESISTORS | RD1/6PM□□□J |

## REMOTE CONTROL RECEPTION UNIT (For KU/CA type only)

**OTHERS**

| | | |
|---|---|---|
| | REMOTE SENSOR | HC-177 |

| Mark | No. | Description | Part No. |
|---|---|---|---|

## TRAY SW UNIT

**SWITCHES**

| | | |
|---|---|---|
| | S941-S943 | DSG1016 |

## UPPER UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | D931-D936 | 1SS254 |

**SWITCHES**

| | | |
|---|---|---|
| | S931-S936 | DSG1015 |

## CA MOTOR UNIT

CA motor unit has no service part.

## LOADING SW UNIT

**SWITCHES**

| | | |
|---|---|---|
| | S961 | DSG1015 |

## RELAY UNIT

**OTHERS**

| | | |
|---|---|---|
| | CN932 CONNECTOR | HLEM9S-1 |

## CASSETTE HOLDER UNIT

**SWITCHES**

| | | |
|---|---|---|
| | S951 | RSK1003 |

## CARRIER DETECT UNIT

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | Q930 | GP1A52HR |

**CAPACITORS**

| | | |
|---|---|---|
| | C930 | CKPUYF223Z25 |

**RESISTORS**

| | | |
|---|---|---|
| | ALL RESISTORS | RD1/6PM□□□J |

## TRAY MOTOR UNIT

Tray motor unit has no service part.

# 7. ADJUSTMENTS

## 7.1 MECHANICAL ADJUSTMENT

- Perform this adjustment in the test mode.
- TEST mode setting.

Short-circuit the JUMPER WIRE (W344) and JUMPER WIRE (W347) for a moment. (Set into TEST mode.)

| Mode | Operation | Display |
|---|---|---|
| DECK I<br>Double speed play | Press the F. F key (side I) in the side I PLAY mode to set to the double speed PLAY mode.<br>(To transfer to the other modes, press the STOP key first.) | : 01,<br>Copy<br>(flashing) |
| DECK II<br>Double speed play | Press the F. F key (side II) in the side II PLAY mode to set to the double speed PLAY mode.<br>(To transfer to the other modes, press the STOP key first.) | : 01,<br>Copy<br>(flashing) |

To cancel the TEST mode, press the COUNTER RESET key or turn off the power.

1. Tape Speed Adjustment and Check

| No. | Deck | Mode | Test tape | Adjusting points | Specifications/Ratings (playback frequency) | Remarks |
|---|---|---|---|---|---|---|
| 1 | II | Normal speed PLAY | STD-301<br>(3 kHz) | After playing back for 1 minute. | | |
| 2 | | Double speed PLAY | | check | 6000 Hz ± 600 Hz | |
| 3 | | Normal speed PLAY | | VR851 | 3020Hz ± 5Hz. | |
| 4 | I | | | After checking, play back deck I. | | |
| 5 | | | | After playing back for 1 minute. | | |
| 6 | | Double speed PLAY | | VR802 | Within ± 10 Hz against the measurement value of the step 2 (deck II) | |
| 7 | | Nomal speed PLAY | | VR801 | 3020 Hz ± 5 Hz | |

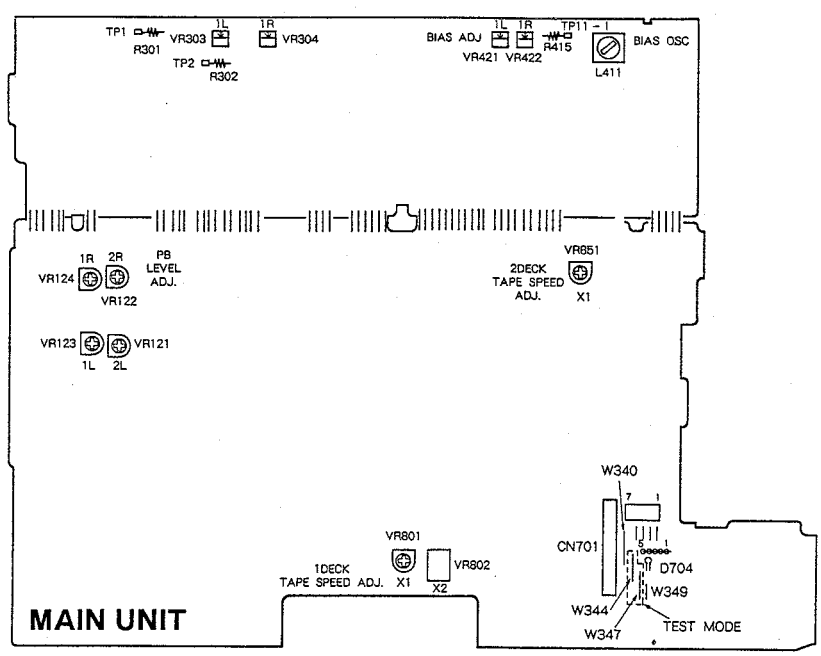



Fig. 7–1 Adjusting points

## 7.2 ELECTRICAL ADJUSTMENTS

### Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0 dBV=1 Vrms.
5. Connect a 50 kΩ (or between 47k to 52 kΩ ) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF
   TAPE SELECTOR : NORM

### Test Tapes

| | |
|---|---|
| STD–331E | : Playback adjustments (See Fig. 7–2) |
| STD–631 | : NORMAL blank tape |
| STD–621 | : $CrO_2$ blank tape |
| STD–610 | : METAL blank tape |

### List of Adjustments

#### Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

#### Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.
4. Level meter check.

NOTE: This unit has an automatic tape selection feature.

* As the reference recording level is 250 nwb/m for STD–331E, the recording level will be higher by 4 dB for STD–331B (160 nwb/m). When adjusting, pay carefull attention to the type of tape used.

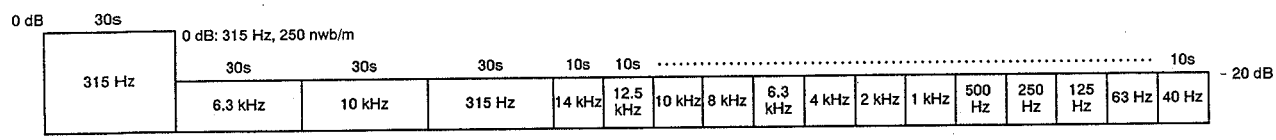



Fig. 7–2 Constants of the test tape STD–331E

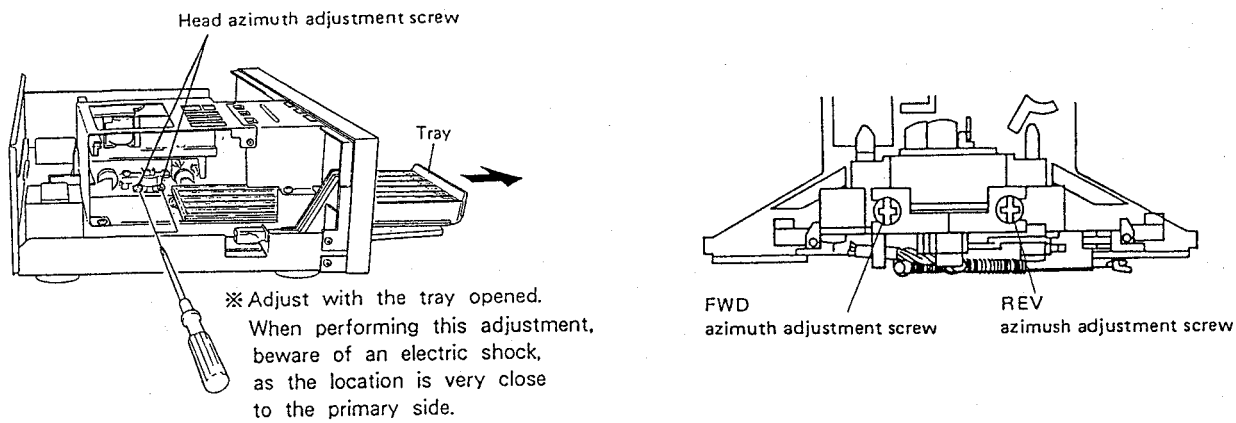



Fig. 7–3 Head azimuth adjustment

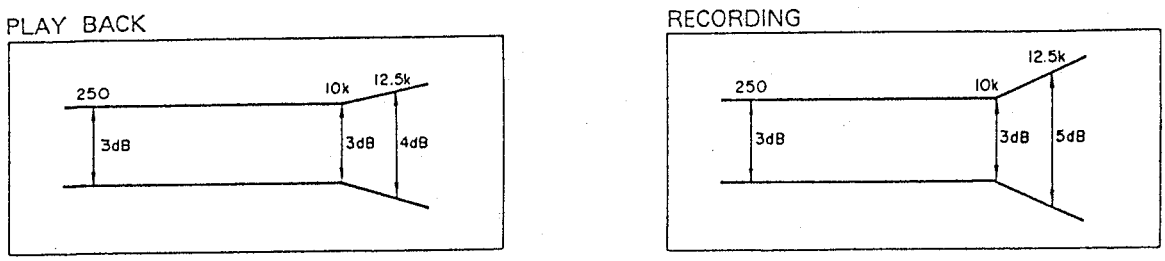



Fig. 7–4 Frequency response zone

# PLAYBACK SECTION

## 1. Head Azimuth Adjustment

- Turn VR123, 124 (Deck I) or VR121, 122 (Deck II) to mechanical center positions.

| No. | Mode | Input signal & test tape | Adjustment location | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|
| 1. | PLAY | Play the 10 kHz/–20 dB section of STD–331E test tape. | Head azimuth adjustment screw. (See Fig. 7–3) | LINE OUT | Maximum playback signal level. | |
| 2. | STOP | Lock the screw with screw lock after completing adjustment. | | | | |

## 2. Playback Level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

| No. | Mode | Input signal & test tape | Adjustment location | | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|---|
| 1. | PLAY | Play the 315 Hz/0 dB section of the STD–331E test tape. | Deck I | VR 123 (Lch)<br>VR 124 (Rch) | TP. 1 (Lch)<br>TP. 2 (Rch) | –6.7 dBV | |
| | | | Deck II | VR 121 (Lch)<br>VR 122 (Rch) | | | |

# RECORDING SECTION

## 1. Bias Oscillator Adjustment

- Adjust the bias oscillator with checks set to recording mode simultaneously.

| No. | Mode | Input signal & test tape | Adjustment location | | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|---|
| 1. | REC | Load the STD–610 test tape with no input signal. | Deck I | L 411 | TP. 11-1 | 105kHz ± 0.3kHz | |

## 2. Recording Bias Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently.
- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

| No. | Mode | Input signal & test tape | Adjustment location | | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|---|
| 1. | REC | Load the STD-631 test tape. Record the 315 Hz and 6.3 kHz signals at –20 dBV input level and playback. | Deck I | VR421 (Lch)<br>VR422 (Rch) | LINE OUT | Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB ± 0.5 dB when compared with the 315 Hz signal. | |

## 3. Recording Level Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently.

| No. | Mode | Input signal & test tape | Adjustment location | | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|---|
| 1. | REC/ PAUSE | Apply a 315 Hz/ – 4 dBV signal to the line input terminals, load the STD–631 test tape. | REC level control volume | | TP. 1 (Lch)<br>TP. 2 (Rch) | –11.2 dBV | |
| 2. | STOP | Set the DOLBY NR switch to the OFF position. | | | | | |
| 3 | REC/ PLAY | Record the above signal onto the STD–631 test tape, and playback. | Deck I | VR303 (Lch)<br>VR304 (Rch) | TP. 1 (Lch)<br>TP. 2 (Rch) | Repeatedly record, playback and adjust so that the playback signal level becomes – 11.2dB. | |
| 4. | REC/ PLAY | Record the above signal onto the STD–621 test tape, and playback. | Check | | TP. 1 (Lch)<br>TP. 2 (Rch) | –11.2 dBV ± 1.5 dB | |
| 5. | REC/ PLAY | Record the above signal onto the STD–610 test tape, and playback. | Check | | TP. 1 (Lch)<br>TP. 2 (Rch) | –11.2 dBV ± 1.5 dB | |

## 4. Level Meter Check

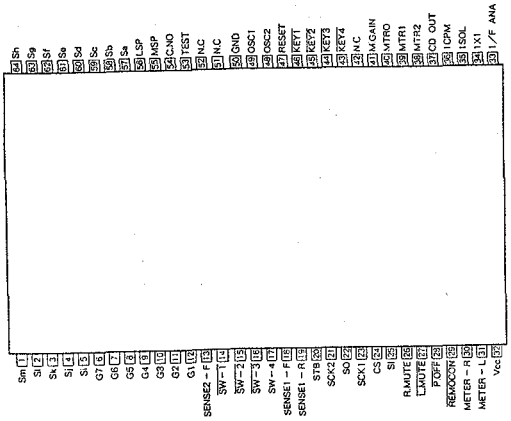
| No. | Mode | Input signal & test tape | Adjustment location | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|
| 1. | REC/ PAUSE | Apply a 315 Hz/–14 dBV (316 mV) signal to the Line Input terminals. | REC level control volume | TP. 1 (Lch)<br>TP. 2 (Rch) | Check that the level meters "0 dB" light up within –7.2 dBV ± 2 dB of the signal output level. | |

# 8. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

## 1. PD3236A (IC700)

### ● Pin Assignment




(Top view)

### ● Pin Functions

| Pin No. | Name | Function |
|---|---|---|
| 1 | Sm | Segment output. |
| 2 | Sl | |
| 3 | Sk | |
| 4 | Sj | |
| 5 | Si | Segment output, key scan output. |
| 6 | G7 | Grid output, key scan output. |
| 7 | G6 | |
| 8 | G5 | |
| 9 | G4 | |
| 10 | G3 | |
| 11 | G2 | |
| 12 | G1 | |
| 13 | SENSE2 – F | Side 2 take up side sensing pulse input. |
| 14 | $\overline{SW-1}$ | Tray SW input. ON at "L". |
| 15 | $\overline{SW-2}$ | |
| 16 | $\overline{SW-3}$ | |
| 17 | SW – 4 | Loading position detection SW input. ON at "H". |
| 18 | SENSE1 – F | Side 1 take up side sensing pulse input. |
| 19 | SENSE1 – R | Side 1 supply side sensing pulse input. |
| 20 | STB | Output expansion IC communication strobe output. |
| 21 | SCK2 | Output expansion IC communication clock output. |
| 22 | SO | Memory, output expansion IC communication data output. |
| 23 | SCK1 | Memory communication clock output. |
| 24 | CS | Chip enable output. Memory selected at "H". |
| 25 | SI | Memory communication data input. |
| 26 | REC MUTE | REC mute control output. ON at "H". |
| 27 | $\overline{LINE\ MUTE}$ | Line mute control output. ON at "L". |
| 28 | $\overline{POFF}$ | Power off pulse input. When "H" → "L", power off processing starts. |
| 29 | $\overline{REMOCON}$ | Remote control pulse input. |
| 30 | METER – R | Rch meter input. |

| Pin No. | Name | Function |
|---|---|---|
| 31 | METER – L | Lch meter input. |
| 32 | Vcc | Power supply pin (+5V). |
| 33 | 1/F ANA | 1/F playback analysis signal input. |
| 34 | 1X1 | Mechanism 1 double speed control output. Speed doubles at "L". |
| 35 | 1SOL | Mechanism 1 solenoid control output. ON at "H". |
| 36 | 1CPM | Mechanism 1 capstan motor control output. ON at "H". |
| 37 | CDOUT | CD synchro control output. |
| 38 | MTR2 | Changer motor rotation direction control output. The carrier is at the right and the tray at the back at "H". |
| 39 | MTR1 | Changer motor selection control output. Tray motor at "H". |
| 40 | MTR0 | Changer motor selection control output. Carrier motor at "H". |
| 41 | M.GAIN | Meter circuit gain switching output. Normally "L". Outputs "H" when MS or when there is no signal. |
| 42 | N.C | – |
| 43 | $\overline{KEY4}$ | Key scan return data input. |
| 44 | $\overline{KEY3}$ | |
| 45 | $\overline{KEY2}$ | |
| 46 | $\overline{KEY1}$ | |
| 47 | RESET | Reset pulse input. Resets at "H". |
| 48 | OSC2 | Clock output. |
| 49 | OSC1 | Clock input. |
| 50 | GND | GND terminal. |
| 51 | N.C | – |
| 52 | N.C | – |
| 53 | TEST | Connected to +5V. |
| 54 | C.NO | Carrier position detection photo interrupter input. |
| 55 | MSP | Changer motor speed control output. "H" when the tray operates. |
| 56 | LSP | Changer motor speed control output. Decelerates at "H". |
| 57 | Sa | Segment output, key scan output, level scan output. |
| 58 | Sb | |
| 59 | Sc | |
| 60 | Sd | |
| 61 | Se | |
| 62 | Sf | Segment output, key scan output. |
| 63 | Sg | |
| 64 | Sh | |

## ● Carrier Position

There are altogether 1 to F positions with SW-4 and C No.
1 to E are counted up and down according to the photo interrupter edge and E → F, F → E determined at the edge of SW-4.

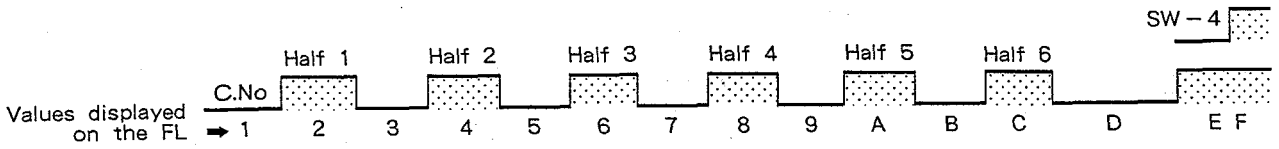



Fig. 1

## ● Carrier Control

① Compare the current position and the target position and determine the direction of the rotation of the carrier motor.
② Decelerate one blank before the target position so that it will stop precisely at the target position.
③ Stop at the target position.
④ Check the position again 200 msec. after it had stopped. If the position is deviated (too front or too back), decelerate, and return to step ③ again.
⑤ After checking the position, check whether it is the half position or the blank position.
It is the half position if the C No. is "H". If it is blank (the photo interrupter has counted incorrectly), return to the cassette mechanism position (F) and repeat from step ① again.

## ● Tray position

There are altogether 0 to 7 positions with SW – 1 to SW – 3.

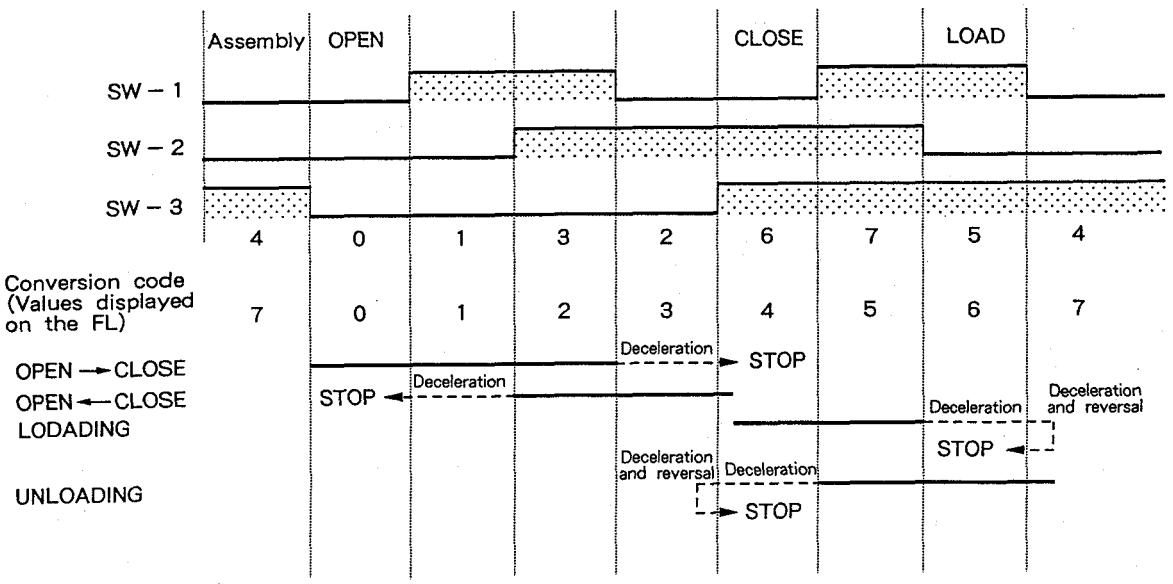


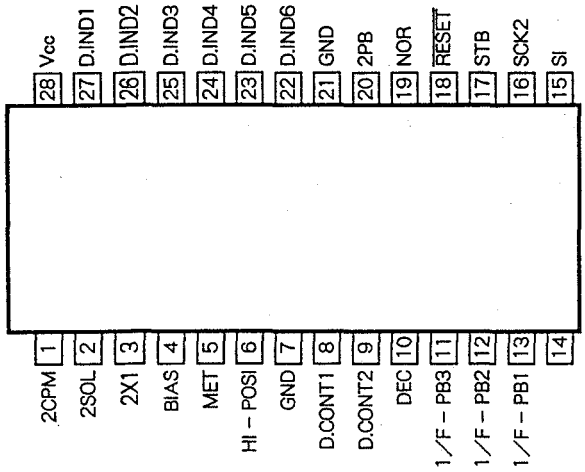

Fig. 2

## ● Tray Control

OPEN, CLOSE, LOADING, and UNLOADING are controlled as above.

## 2. NJU3718L (IC701)

### ● Pin Assignment




(Top view)

### ● Pin Functions

| Pin No. | Name | Function |
|---|---|---|
| 1 | 2CPM | Mechanism 2 capstan motor control output. ON at "H". |
| 2 | 2SOL | Mechanism 2 solenoid control output. The solenoid turns ON at "H". |
| 3 | 2X1 | Mechanism 2 × 2 speed control output. × 2 speed at "L". |
| 4 | BIAS | Bias control output. ON at "H". |
| 5 | MET | Recording equalizer control output. Outputs "H" during metal tape recording. |
| 6 | HI-POSI | Recording equalizer control output. Outputs "H" during metal and $CrO_2$ tape recording. |
| 7 | GND | Connected to the GND. |
| 8 | D.CONT1 | Dolby switching output.<br>Outputs as shown in the right table according to the dolby position.<br>\| \| D.CONT2 \| D.CONT1 \|<br>\| OFF \| L \| H \|<br>\| B \| H \| L \|<br>\| C \| L \| L \| |
| 9 | D.CONT2 | |
| 10 | DEC | Dolby IC encoder/decode switching output. Outputs "H" during decoding (PLAY, MS). |
| 11 | 1/F-PB3 | Pins 11 to 13 are 1/F playback compensation outputs.<br>All pins output "L" when the 1/F playback mode is off.<br>The compensation amount is maximum when all pins output "H". |
| 12 | 1/F-PB2 | |
| 13 | 1/F-PB1 | |
| 14 | N.C | – |
| 15 | SI | Communication data input. |
| 16 | SCK2 | Communication clock input. |
| 17 | STB | Strobe signal input. |
| 18 | $\overline{\text{RESET}}$ | Reset signal input. |
| 19 | NOR | Playback equalizer control output. Outputs "H" during normal tape playback. |
| 20 | 2PB | Mechanisms 1 and 2 switching of the playback system. Outputs "H" during the mechanism 2 side playback. |
| 21 | GND | Connected to the GND. |
| 22 | D.IND6 | Tray LED display control output. Outputs "H" when the 6th tape is loaded. |
| 23 | D.IND5 | Tray LED display control output. Outputs "H" when the 5th tape is loaded. |
| 24 | D.IND4 | Tray LED display control output. Outputs "H" when the 4th tape is loaded. |
| 25 | D.IND3 | Tray LED display control output. Outputs "H" when the 3rd tape is loaded. |
| 26 | D.IND2 | Tray LED display control output. Outputs "H" when the 2nd tape is loaded. |
| 27 | D.IND1 | Tray LED display control output. Outputs "H" when the 1st tape is loaded. |
| 28 | Vcc | Power supply pin (+5V). |

## ● Test Mode

① Entering the Test Mode
Short-circuit the jumper wires (W344 and W347) of the unit with a screwdriver.
In the test mode, the basic mechanism operation key, changer key, HI SPEED COPY key, CD SYNCHRO key, COUNTER MODE key, COUNTER RESET key, and DOLBY SEL key can be accepted.

| Key Pressed | Display | Adjustment and Check |
|---|---|---|
| Basic mechanism operation key | : 00 | Carries out basic mechanism operations even when there is no half and enables the following checks to be carried out.<br>• Auto stop check<br>Stops after one second when played reversed.<br><br>• Bias oscillation check<br>Record. |
| COUNTER MODE | : 02 | • SWs Check<br>I , II — Lights up when there is a half.<br>◄, ► — The DIRECTION lamp lights up when recording can be carried out.<br>B — Lights up with TIMER REC.<br>C — Lights up with TIMER PLAY.<br><br>• CD synchro jack check<br>CD SYNC lights up when the jack is connected.<br><br>• CD synchro input/output signal check<br>Connect the jack for checking and continue pressing the SYNCHRO KEY.<br>CD SYNC blinks. |

② FLEX Function Check Mode
When the FLEX key is pressed, this mode will be set and the following modes set cyclically.

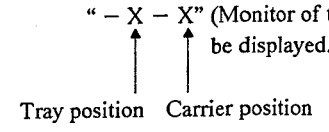
| Key Pressed | Display | Adjustment and Check |
|---|---|---|
| FLEX | OX : 03 | • Sweep mode<br>The compensation value of the FLEX function compensation circuit is switched at regular intervals between 0 and 7.<br>The compensation value is displayed. |

③ Releasing the Test Mode
Press the COUNTER RESET KEY to release the mode.
Or turn off the power.

## ● Manual Mode

The changer mechanism motor (tray motor, carrier motor) can be operated manually. This mode is used for recovering the changer mechanism when it has locked.

① Entering the Manual Mode
Turn off the power, set the timer SW to T – PLAY, and short – circuit the jumper wires (W347 and W349) of the unit. Then turn on the power in this state. Leave the jumper wires short – circuited.
The changer mechanism will not be initialized at this time.



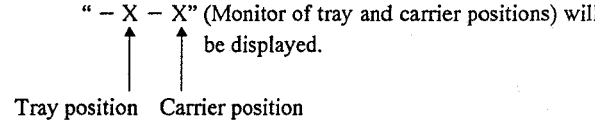

② Releasing the Manual Mode
Turn off the power.

Keys accepted are as follows. They function only while pressed.

| | | |
|---|---|---|
| FF KEY | : | Moves to the right of the carrier |
| FWD KEY | : | Moves to the left of the carrier |
| REW KEY | : | Moves in the tray open direction |
| REV KEY | : | Moves in the tray close direction |

## ● Monitor Mode

With the power turned on, set the timer SW to T – PLAY, and short – circuit the jumper wires (W347 and W349) of the unit.



# 9. PACKING AND PARTS LIST

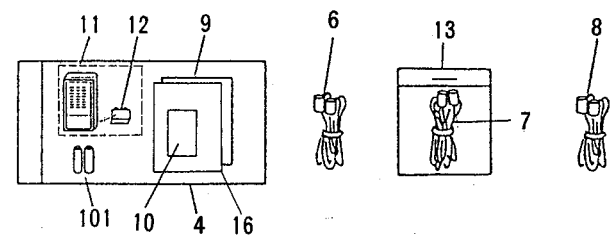
**NOTES:**

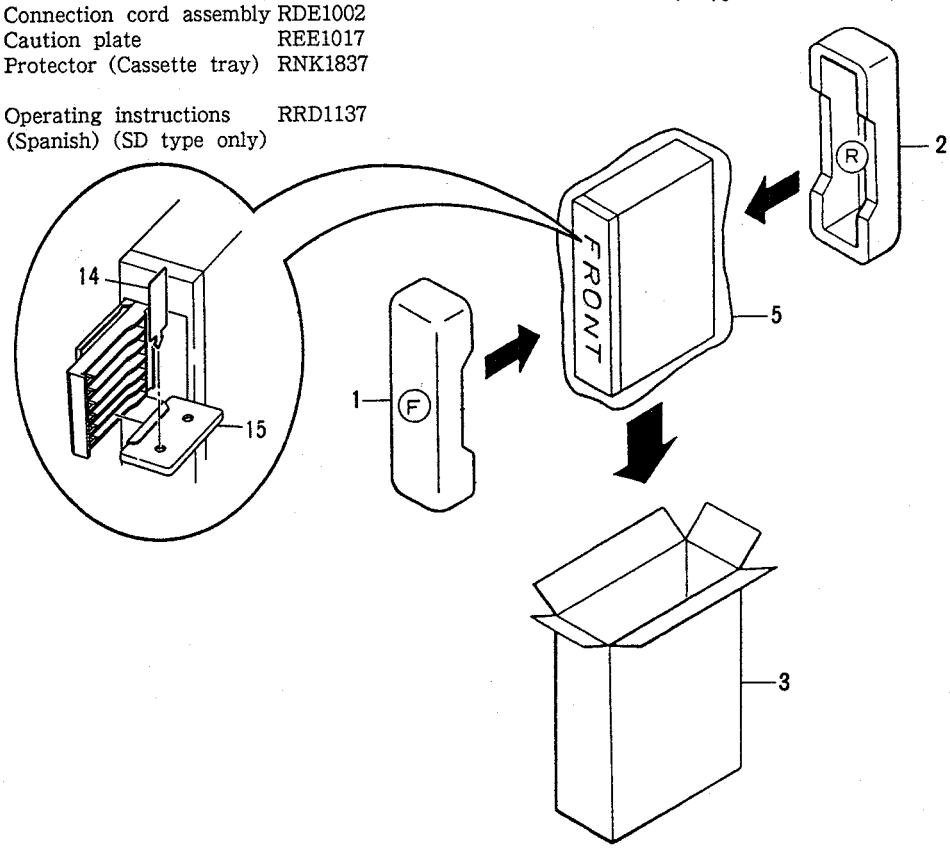
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Parts List

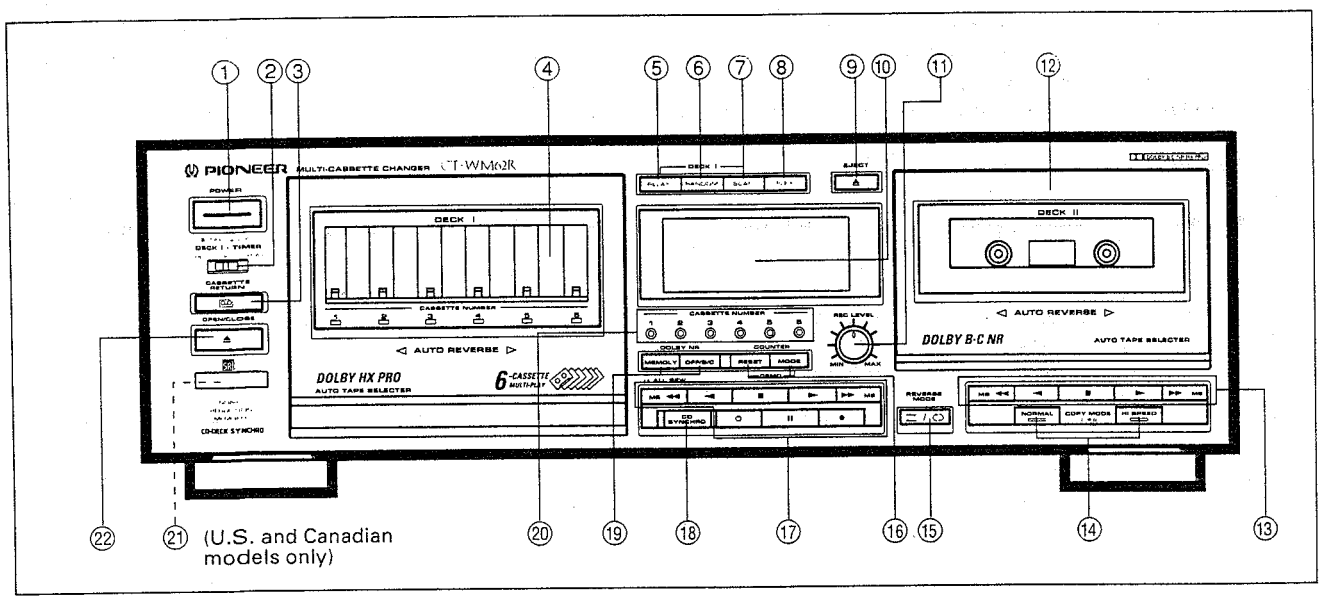
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Pad (F) | RHA1044 |
| | 2 | Pad (R) | RHA1045 |
| | 3 | Packing case (KU/CA type) | RHG1487 |
| | | Packing case (SD type) | RHG1488 |
| | 4 | Plastic bag (KU/CA type) | RHL1001 |
| | | Plastic bag (SD type) | Z21 – 038 |
| | 5 | Sheet | RHX1007 |
| | 6 | Connection cord (with mini plug) | PDE – 319 |
| | 7 | Connection cord | RDE – 010 |
| | 8 | Control cord | RDE1031 |
| | 9 | Operating instructions (English) | RRB1134 |
| | 10 | Title seal | RRW1065 |
| | 11 | Remote control unit (KU/CA type only) | RPX1067 |
| | 12 | Battery cover (KU/CA type only) | PZN1012 |
| | 13 | Connection cord assembly | RDE1002 |
| | 14 | Caution plate | REE1017 |
| | 15 | Protector (Cassette tray) | RNK1837 |
| | 16 | Operating instructions (Spanish) (SD type only) | RRD1137 |
| NSP | 101 | Dry cell battery (R03, AAA) (KU/CA type only) | VEM – 022 |

*Caution plate and protector are used as a cassette tray protector when shipping.



# 10. PANEL FACILITIES




① **POWER ( ▮ OFF ▁ ON) switch**
When the POWER switch is pressed to turn the cassette deck on, the 6 cassette indicators on the cassette door flash to indicate that the circuits are warming up. After about 10 seconds, the circuits become stable and the cassette deck can be operated .
All the indicators in the display window will light when the power is turned on. The display will be set to its normal state when one of the operation buttons is pressed.

② **DECK I TIMER (REC, OFF, PLAY) switch**
Use this switch to select the timer relay recording or timer relay playback functions.

③ **CASSETTE RETURN button**
Press this button to return the loaded cassette to the tray.

④ **DECK I cassette door and tray**
All of the cassette indicators on the cassette door flash while the cassette deck is warming up. When the cassette door is closed and there are cassettes on the tray, the indicators for the tray slots which contain cassette tapes (including the currently loaded tape) will light. When a cassette is being loaded from the tray, the corresponding indicator flashes.

⑤ **RELAY button**
Press this button to select relay recording or relay playback. The RELAY indicator lights when relay mode is selected.

⑥ **RANDOM button**

⑦ **SCAN button**

⑧ **FLEX button**

⑨ **DECK II eject button (EJECT)**
Press this button to open the cassette door of DECK II.
*NOTE:*
*The cassette door cannot be opened while the tape is running (recording, playback, etc.). Press the stop ( ■ ) button of DECK II before pressing this button.*

⑩ **Display window**

⑪ **REC LEVEL control knob**

⑫ **DECK II cassette door**

⑬ **DECK II operation buttons**

**Fast forward (►► MS):** If this button is pressed during stop mode, the tape is fast-forwarded in the direction of the arrows (towards the end of side A or the beginning of side B). If it is pressed during playback, the cassette deck skips forward one selection for each press of the button (up to 15 selections), and playback resumes at the beginning of the designated selection.

**Forward play (►):** During stop mode, press this button to begin playback of side A; that is, the side facing outward (forward playback).
During recording standby mode, press this button to begin recording on side A.

**Stop (■):** Press this button to stop the tape transport.

**Reverse play (◄):** Press this button to begin playback of side B; that is, the side facing the rear of the cassette deck (reverse playback).
During recording standby mode, press this button to begin recording on side B.

**Fast reverse (MS ◄◄):** If this button is pressed during stop mode, the tape is fast-forwarded in the direction of the arrows (towards the beginning of side A or the end of side B). If it is pressed during playback, the playback position skips backward by one selection for each press of the button (up to 15 selections), and playback resumes at the beginning of the designated selection.

### ⑭ COPY MODE I ◁ II buttons

**NORMAL:** Press this button to copy a tape from DECK II to DECK I.

**HI SPEED:** Press this button to copy a tape from DECK II to DECK I at twice the normal speed.

### ⑮ REVERSE MODE button

Use this button to choose the tape transport mode.

⇄: One way mode. Tape transport stops after one side of a tape is played or recorded.
When relay mode is selected, after one cassette ends, playback or recording (of one side only) continues on the cassette in the next tape slot, and so on until the cassette in the highest numbered tape slot is reached.

↻: Reverse mode. During playback, both sides of the tape are played back continuously until the tape has been played back 8 times (16 sides). During recording, both sides of the tape are recorded, and then tape transport stops.
When relay mode is selected, after both sides of one cassette have been recorded or played back once, playback or recording continues on the cassette in the next tape slot, and so on until the cassette in the highest numbered tape slot is reached.

***NOTE:***

*During recording, relay playback and random playback, the auto reverse function will only operate when the tape is moving from the end of side A to the beginning of side B. The tape cannot move automatically from the end of side B to the beginning of side A during these modes (i.e., the tape will stop at the end of side B even when reverse mode Is selected). This indicates that the cassette deck will switch automatically from side A to side B, but will not switch automatically from side B to side A. If, for example, recording is started from the beginning of side B, the tape will stop after only one side is recorded, even though reverse mode is selected.*

### ⑯ COUNTER buttons

**MODE:** Each time this button is pressed, the multifunction display switches between tape counter display mode and time counter display mode.

**RESET:** When this button is pressed, the tape counter is reset to 0000 and the time counter is reset to 00: 00.

### ⑰ DECK I operation buttons

These buttons operate in the same way as the operation buttons of DECK II, with the following exceptions:

**Forward play (►):** If the tray is open when this button is pressed, it will close automatically, the cassette in the lowest numbered slot will be loaded, and side A will be played back.

**Reverse play (◄):** If the tray is open when this button is pressed, it will close automatically, the cassette in the lowest numbered slot will be loaded, and side B will be played back.

**Fast reverse (MS ◄◄):** Load a cassette tape in the tape transport mechanism, then press this button twice to select the ALL REWIND mode. The ALL REWIND mode begins from the currently playing tape. Press the button once more to return to normal REWIND mode.

**Recording (●):** When this button is pressed, the cassette deck enters recording standby mode. Recording begins when the play (► or ◄) button or pause (II) button is pressed.

**Pause (II):** Press this button to temporarily pause recording or playback. Press the button again to resume recording or playback. The pause button cannot be used during fast-forward or fast-reverse. If this button is pressed after the recording (●) button is pressed, recording will begin.

**Recording mute (O):** When this button is pressed during recording, the cassette deck creates a 4-second blank space on the tape and then enters recording standby mode. If the button is pressed and held, the deck continues to create a blank space until the button is released.

### ⑱ CD-DECK SYNCHRO recording button (CD SYNCHRO)

### ⑲ DOLBY* NR buttons

**DOLBY NR MEMORY button:**
Press this button to begin setting the DOLBY NR system, or to check the current DOLBY NR settings.

**DOLBY NR OFF/B/C button:**
Press this button repeatedly to select the desired type of DOLBY NR. The selected type of DOLBY NR (B or C) is displayed.
If no display appears, DOLBY NR OFF is selected.
When playing back Dolby NR-encoded tapes, always select the same position (OFF, B or C) used for recording.

*
- *Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.*
- *"DOLBY", the double-D symbol ⧈ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.*

### ⑳ CASSETTE NUMBER buttons (1~6)

Press one of these buttons to select the cassette which will be loaded from the tray into the tape transport mechanism of DECK I.

### ㉑ Remote control sensor window (U.S and Canadian models only)

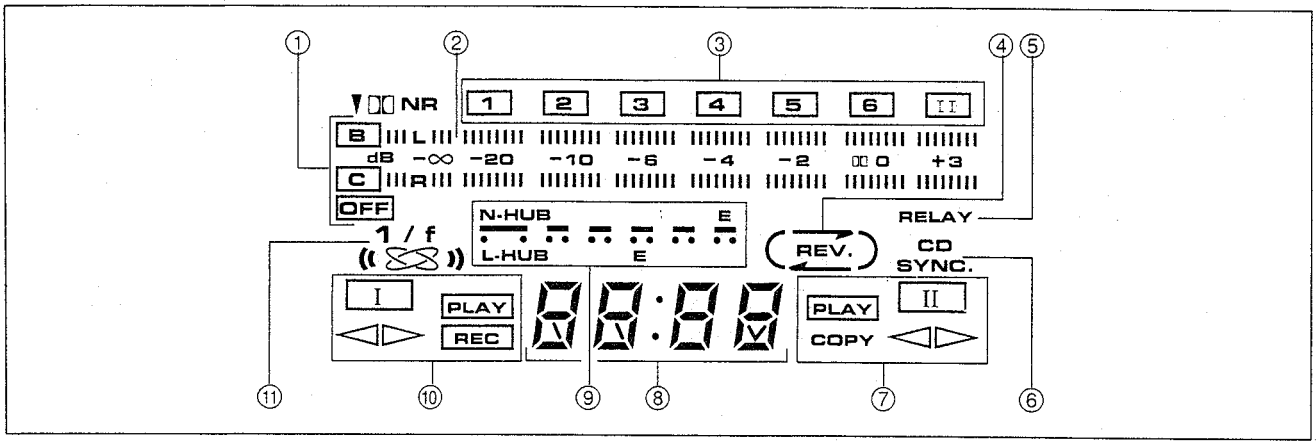
### ㉒ DECK I OPEN/CLOSE button (⏏)

Press this button to open the cassette door. When the door is open, cassette tapes can be placed onto or removed from the tray. If a cassette is loaded in the tape transport mechanism (see page 5), the door can stili be opened and tapes can be added or removed. However, DO NOT place a cassette in the tray slot previously occupied by the loaded cassette.

***NOTE:***

*The cassette tray cannot be opened unless the POWER switch is turned OFF.*

## DISPLAY WINDOW




### ① DOLBY NR B/C/OFF indicator

Indicates the selected type of Dolby noise reduction (B-type or C-type). The DOLBY NR system is turned OFF when neither of the B or C indicators are lighted. In this case, the OFF indicator will flash if the DOLBY NR MEMORY button is pressed.

### ② Level meter

Indicates the left and right channel signal levels. Indicates the recording level during recording, and the recorded level during playback. The □□ mark beside 0 indicates the Dolby NR system standard level. The level meter on this cassette deck has a peak hold function which continues to display the peak level for 1.2 seconds, to make adjustment of the recording level easier.

### ③ Cassette number indicators/DECK II indicator

The cassette number indicators light when the indicated cassette has been loaded into the tape transport mechanism of DECK I. When the ALL REWIND mode is in operation, the number of the cassette being rewound will flash; when the ALL REWIND operation is completed, the number will go out.

When the DOLBY NR MEMORY button is pressed, the selected type of Dolby noise reduction for each tape is displayed below the cassette number and DECK II indicators.

### ④ Reverse mode indicator (REV.)

Indicates the tape transport mode:

⇄: One way mode is selected.

(REV.): Reverse mode is selected.

***NOTE:***

*During recording, relay playback and random playback, the autoreverse function will only operate when the tape is moving from the end of side A to the beginning of side B. The tape cannot move automatically from the end of side B to fhe beginning of side A during these modes (i.e., the tape will stop at the end of side B even when reverse mode is selected).*

### ⑤ RELAY indicator

Lights when the cassette deck is in relay mode.

### ⑥ CD Synchro indicator (CD SYNC.)

Lights when synchro recording from a CD player is being carried out.

### ⑦ DECK II tape transport indicators (II)

### ⑧ Multifunction display

### ⑨ DECK I remaining time indicators

Indicate the approximate time remaining on the tape during recording and playback. When the tape is close to the end, each indicator will flash and then go off in sequence.

### ⑩ DECK I tape transport indicators (I)

### ⑪ FLEX (1/f) indicator

If the FLEX button is pressed while the unit is in the play mode, the 1/f indicator lights, and the «≋» indicator flashes. When FLEX tuning is completed, the indicator lights steadily.

## Dolby HX PRO Headroom Extension System

The Dolby HX PRO system controls the level of signals during recording and always keeps it at an optimal level according to the level of the high frequency components of the music signal and the tape bias. It therefore provides excellent recording quality even when recording signals from digital sources which contain a large amount of high-frequency components. To guarantee optimal recording results, The HX PRO system is activated automatically when recording begins. The Dolby HX PRO system operates regardless of the setting of the Dolby NR system buttons.

## Dolby NR Systems

The Dolby NR systems are designed to reduce the amount of tape hiss, mainly in the treble components. During recording, the high-pitched pianissimo sounds which are most characteristic of audible noise are boosted, and during playback, only those boosted sections are attenuated, so that tape sound is returned to normal. As a result, the noise is attenuated by an amount equal to the boosting in the treble range. The Dolby B-type NR system reduces noise in the treble range, cutting tape hiss and expanding the dynamic range.

The Dolby C-type NR system is even more effective in reducing noise, as it cuts the noise from the mid-range on.

***NOTE:***

*When a tape has been recorded using Dolby B-type or C-type noise reduction, make sure that the DOLBY NR buttons are set to the same position during playback.*

# 11. SPECIFICATIONS

System .....4-track, 2-channel stereo
Heads ......"Hard Permalloy" recording/playback head x 1
"Hard Permalloy" playback head x 1
"Ferrite" erasing head x 1
Motors .....DC servo motor (capstan) x 2
DC motor (open/close, loading) x 2
Wow and flutter.....No more than 0.09% (WRMS)
Fast winding time .....Approximately 120 seconds (C-60 tape)

Frequency response
–20 dB recording:
TYPE I (Normal) tape.....20 to 17,000 Hz, ± 6 dB
TYPE II (HIGH/$CrO_2$) tape.....20 to 18,000 Hz, ± 6 dB
TYPE IV (Metal) tape.....20 to 19,000 Hz, ± 6 dB
Signal-to-Noise ratio
Dolby NR OFF .....More than 58 dB
Noise reduction effect
Dolby B type NR ON .....More than 10 dB (at 5 kHz)
Dolby C type NR ON .....More than 19 dB (at 5 kHz)

Harmonic distortion .....No more than 0.8% (–4 dB)
Input (Sensitivity)
LINE (INPUT).....112 mV (Input impedance 57 kΩ)
Output (Reference level)
LINE (OUTPUT) .....0.5 V (Output impedance 7.4 kΩ)

## Miscellaneous

Power requirements
U.S., Canadian models .....AC 120 Volts, 60 Hz
Multi-voltage model .....AC 110 V/ 120 V~127 V/220 V/240 V (switchable), 50/60 Hz
Power consumption
U.S. and Canadian models.....22 W
Multi-voltage model.....23 W
Dimensions .....420 (W) x 135.5 (H) x 364 (D) mm
16-9/16 (W) x 5-5/16 (H) x 14-5/16 (D) in
Weight (without package).....7.2 kg (15 lb 9 oz)

## Accessories

Operating instructions .....1
Connection cord with pin plugs .....2
CD-DECK SYNCHRO control cord .....1
System remote control cord
(U.S. and Canadian models only) .....1
Cassette labels .....1
Remote control unit (U.S. and Canadian models only) .....1
Dry cell batteries "AAA" (IEC R03/UM-4)
(U.S. and Canadian models only) .....2

## Subfunctions

- DOLBY NR B/C types
- DOLBY HX PRO (DECK I only)
- DOLBY NR memory
- High-speed and normal-speed tape copying (DECK II → DECK I)
- Synchronized copy start
- Blank skip
- Music search over ±15 selections
- CD-DECK SYNCHRO recording capability (DECK I only)
- Tape counter/Time counter
- Tape Remaining Time indicators (6 seg; DECK I only)
- FL peak level meter (7 seg + ∞)
- Automatic space recording mute (DECK I only)
- One-touch recording pause (DECK I only)
- Automatic tape selector
- Automatic reverse
- TIMER RELAY Recording/TIMER Playback (DECK I only)
- System remote control compatible
- Relay recording/Relay playback (DECK I only)
- All rewind (at high speed, on DECK I only)
- Cassette random playback (DECK I only)
- Cassette scan playback (DECK I only)
- Powered eject (DECK I only)

***NOTE:***
*Specifications and design subject to possible modifications without notice due to improvements.*